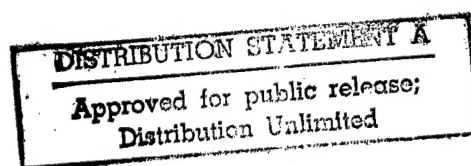


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6 August 1996

Environmental Fate of Fog Oil at Fort McClellan, Alabama

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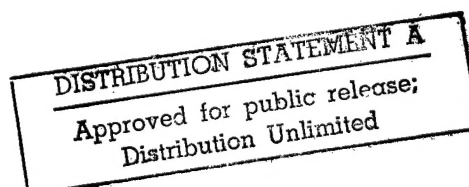
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Section 1.0

Introduction

A study of fog oil was initiated at Fort McClellan, Alabama in August, 1995. This study assessed the environmental fate of fog oil in areas where fog oil smoke production had occurred chronically (over 10 years). This study was conducted as part of the "Biological Assessment: Relocation of U.S. Army Chemical School and U.S. Army Military Police School to Fort Leonard Wood, Missouri" (3D/Environmental 1996).

The proposed Base Realignment and Closure (BRAC) action will involve moving the U.S. Army Chemical and Military Police schools from Fort McClellan, Alabama to Fort Leonard Wood, Missouri. A major component of this BRAC action is introduction of fog oil smoke training to Fort Leonard Wood. Because the BRAC action may affect the human environment, an Environmental Impact Statement (EIS) was prepared. Potential impacts to endangered and threatened species were assessed in a Biological Assessment (BA).

Two federally endangered species, Indiana bats (*Myotis sodalis*) and gray bats (*Myotis grisescens*), and one threatened species, the bald eagle (*Haliaeetus leucocephalus*) occur on Fort Leonard Wood. These species are protected under the Endangered Species Act (ESA) (Public Law 93-205).

Samples were obtained from 3 locations (exposure sites) where fog oil smoke training has occurred since the 1980's: Range 24 A, Range 56, and Battle Drill Area. The

type and amount of fog oil smoke training varies at each site. We also selected a reference or control site at Choccolocco Creek.

We selected a reference site at a location where fog oil smoke training had not occurred. We were limited in choices of possible reference sites at Fort McClellan because most of Fort McClellan's water systems have been impacted from fog oil training and we needed a reference site with aquatic habitat. The Choccolocco Creek reference site is outside Fort McClellan's boundary, but is on land leased by the installation from the State of Alabama's Forestry Office.

We sampled surface water, soil, sediment, and biota tissue to determine the persistence of fog oil in the environment, and to determine whether fog oil bioaccumulates. We looked at fog oil hydrocarbons in tissue of 3 trophic levels of the terrestrial ecosystem: primary producers (plants), primary consumers (insects), and secondary consumers (bats). We also collected fish (a prey item of bald eagles) and analyzed their tissue for fog oil constituents.

A second study was initiated in October 1995. This study involved collecting samples of fog oil smoke from M56 and M157 generators to determine the chemical composition of fog oil smoke. Several studies have reported volatile or semi-volatile organic compounds form in fog oil smoke as it leaves generators. These studies also indicate some thermal decomposition occurs as well as chemical changes in fog oil smoke. Samples of fog oil collected in October 1995 were examined for volatiles, semi-volatiles, and thermal decomposition products. We used these analyses to identify the potential contribution of fog oil to chemicals identified in water, soil, sediment, and biota tissue samples. We were able to determine how fog oil chemically changes after passing through the generator and condensing into smoke.

Fog oil has had several designations in its history which may lead to confusion. There are two types of fog oil, "old" fog oil and "new" fog oil. Fog oil also has letter designations used by the military for purchasing or issuing requests for production from manufacturers: Types A and B are "old" fog oil (also referred to as SGF 1) that were manufactured under specifications A and B before 1986. "New" fog oil, designated as

types C, D, or E, is also referred to as SGF 2 fog oil (Standard Grade Fuel 2). It is the primary material currently used to produce smoke at Fort McClellan and other installations. Fog oil type D is currently used at Fort McClellan, Alabama. Fog oil type D or E will be used at Fort Leonard Wood. Fog oil types C, D, and E are chemically and structurally the same compounds. Different types of fog oil are defined by requirements and specifications given to manufacturers.

Results from both studies were used in design and development of toxicological studies for the Fort Leonard Wood BRAC Biological Assessment and Ecological Risk Assessments. While the type of fog oil used at the two installations may be different, environmental behavior of fog oil at Fort McClellan will have useful applications to Fort Leonard Wood. Old fog oil that was used at Fort McClellan had high concentrations of aromatic hydrocarbons not found in new fog oil. These aromatic hydrocarbons are the most likely component of fog oil to be retained in the environment. Our analysis of fog oil smoke detected aromatic hydrocarbons and paraffinic hydrocarbon. If none of the hydrocarbons in old fog oil are present in samples taken from Fort McClellan, it is likely no fog oil hydrocarbons will be retained in the environment at Fort Leonard Wood.

Samples from exposure sites and the reference site were analyzed for fog oil hydrocarbons and one chlorinated hydrocarbon. Hexachloroethane (HC) is another obscurant used extensively at exposure sites. HC is a chlorinated hydrocarbon that has a long environmental residence time. In order to insure hydrocarbons detected in samples from exposure sites were from fog oil and not HC, we included HC in our analysis.

Section 2.0

Objectives

This study was performed to determine the following:

- Do constituents of fog oil bioaccumulate in plant, insect, bat, or fish tissues in areas where fog oil smoke training has been conducted for at least 10 years?
- Does fog oil used at Fort McClellan remain in soil, water, or sediment long enough to be detected in media samples?
- Does fog oil migrate vertically into the soil in concentrations large enough to be detected?
- What volatile and semi-volatile compounds are formed in fog oil smoke after it is released from M56 and M157 generators?
- What percentage of type D or E (hydrotreated) fog oil is aromatic?

Section 3.0

Site Description

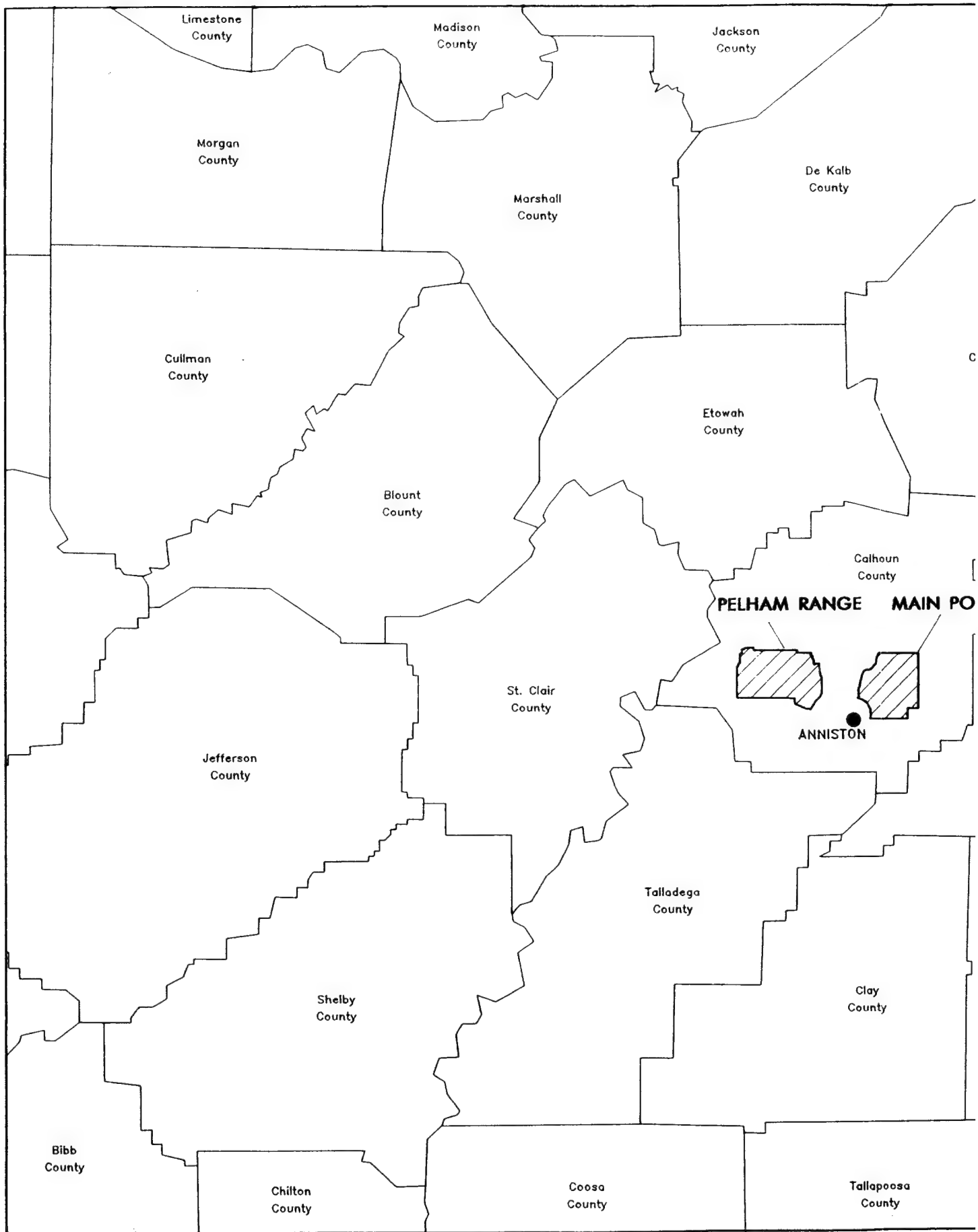
3.1 FORT McCLELLAN

3.1.1 Geomorphology

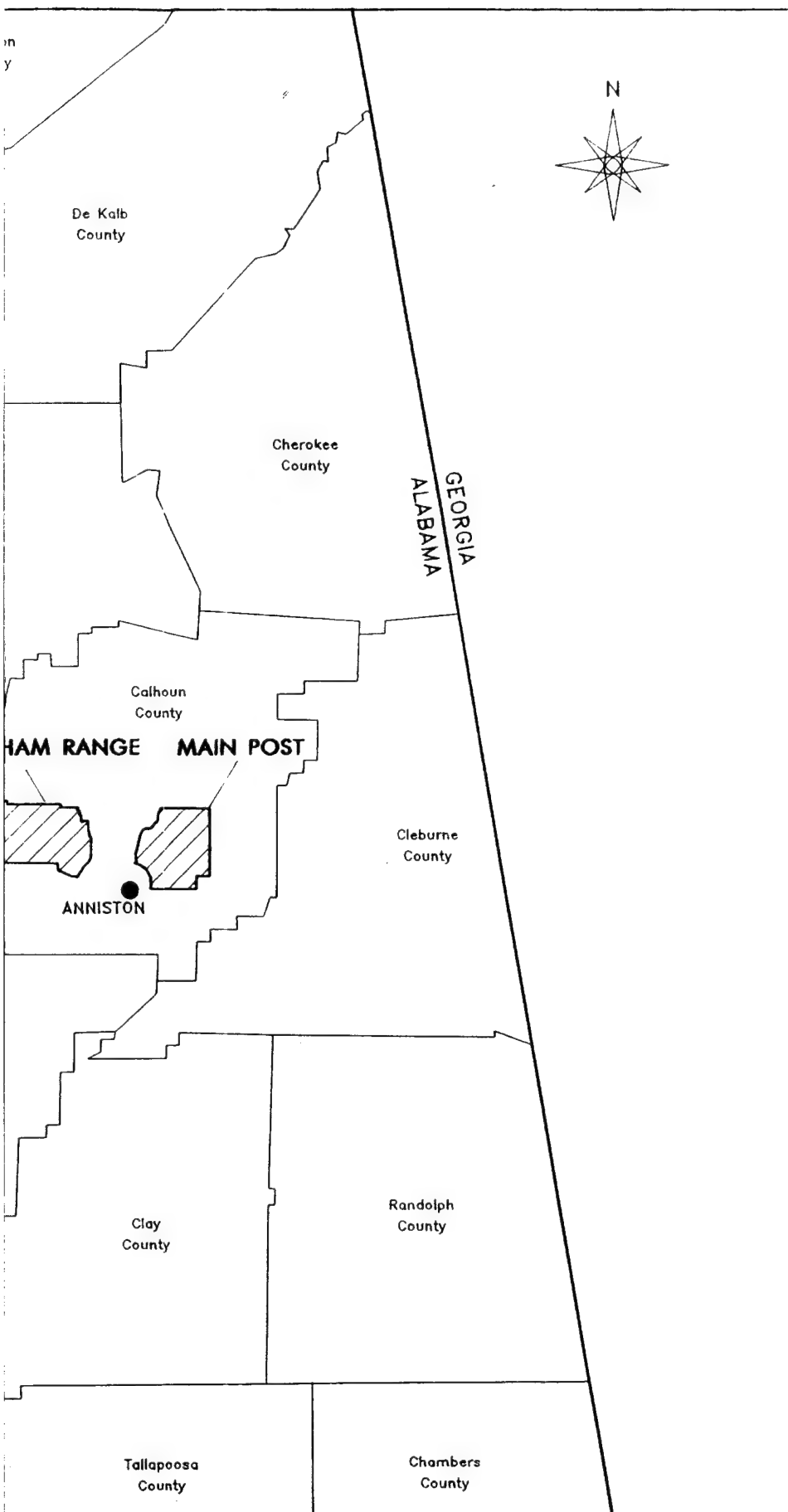
Fort McClellan is located in Calhoun County within the Ridge and Valley Provinces of the Appalachian Highlands (Figure 1). Rock within the Ridge and Valley Province is folded and faulted. The province displays many geomorphic ridges and valleys, of alternating strong and weak strata. Streams in these valleys and ridges have trellis drainage systems. Summits on the ridges may represent former erosion surfaces, and hundreds of gaps which are indicative of innumerable past cases of stream diversion (Thornbury 1965).

The province is an assemblage of valleys surrounded by narrow, linear ridges. The eastern part of the province is predominately valley and not crossed by a single transverse ridge. The western part is characterized by linear sandstone ridges separated by limestone and shale valleys (Thornbury 1965).

①




2



ENVIRONMENTAL FATE OF FOG OIL AT FORT McCLELLAN, ALABAMA

FIGURE 1. Location of Fort McClellan,
Alabama.

 Fort McClellan

Kilometers
0 14 28


3D/ENVIRONMENTAL

13

ENVIRONMENTAL FATE OF FOG OIL
AT FORT McCLELLAN, ALABAMA

FIGURE 1. Location of Fort McClellan,
Alabama.

 Fort McClellan

Kilometers

0 14 28

3D/ENVIRONMENTAL

The Ridge and Valley Province is divided into 3 sections: northern, middle, and southern. Calhoun County lies within the southern section. The southern section has numerous thrust faults with homoclinal ridge characteristics and longitudinal drainages (Thornbury 1965).

There are 19 known caves in the Calhoun County. The names of the caves are included here with a brief description of their major features (Table 1).

Folded and faulted Precambrian and Pennsylvanian rocks are the predominant geologic structural features of the Fort McClellan area. These rocks have folded into sharp northeastward-tending synclines and anticlines as well as thrust faults.

The Main Post is characterized by the Weisner Formation, composed of shale, siltstone, sandstone, quartzite, and conglomerate. Outcrops of the formation form hills or mountains. Quartzite and conglomerate form ledges along the side of the Choccolocco Mountain (Ebasco Environmental 1994). Choccolocco Mountain borders the eastern side of Main Post.

Pelham Range is underlain by Cambrian dolomites and has rolling topography with moderate relief. The Cheputepec, Copper Ridge, and Ketona dolomite formations occur under the area. The northwestern portion of Pelham Range is unique, where dolomite contacts the anticlines and synclines of the Conasauga formation. Chert is quite abundant in these formations (Ebasco Environmental 1994).

3.1.2 Soils

Calhoun County, Alabama has 4 major geologic sections: rough mountains, intermediate ridges, lower ridges, and valleys (Thornbury 1965). The parent materials within these sections are different, and important in describing soils types and formations within the county.

TABLE 1. Nineteen identified caves in Calhoun County, Alabama (Varnedoe 1973).

Cave Name	Major Features
Wilson Cave	Rock Type: Ft. Payne Chert Type of Entrance: stoopaway Length of Cave: 30 feet Depth of Cave: 27 feet
Erby Cave	Rock Type: Conasauga Limestone Type of Entrance: crawl Length of Cave: 91 feet Depth of Cave: single level
Baswell Cave	Rock Type: Limestone Type of Entrance: stoopaway Length of Cave: 30 feet Depth of Cave: single level
Maxwellborn Cave	Rock Type: Conasauga Limestone Type of Entrance: crawl Length of Cave: 30 feet Depth of Cave: single level
Oxford Cave	Rock Type: Conasauga Limestone Type of Entrance: --- Length of Cave: 912 feet Depth of Cave: single level
Cedar Mountain Cave	Rock Type: Limestone Type of Entrance: stoopaway Length of Cave: 304 feet Depth of Cave: 27 feet
Daugette No. 1 Cave	Rock Type: Limestone Type of Entrance: stoopaway Length of Cave: 1074 feet Depth of Cave: 121 feet

TABLE 1. Nineteen identified caves in Calhoun County, Alabama (Varnedoe 1973).

Cave Name	Major Features
Daugette No. 2 Cave	Rock Type: Limestone Type of Entrance: stoopaway Length of Cave: 91 feet Depth of Cave: single level
Greens Creek Mountain Cave	Rock Type: Limestone Type of Entrance: crawl Length of Cave: 30 feet Depth of Cave: single level
Green Valley Cave	Rock Type: Limestone Type of Entrance: stoopaway Length of Cave: 1400 feet Depth of Cave: 27 feet
Short Cave	Rock Type: Limestone Type of Entrance: stoopaway Length of Cave: 30 feet Depth of Cave: 27 feet
Lin and Randy's Pit	Rock Type: Limestone Type of Entrance: walk in Length of Cave: 91 feet Depth of Cave: 33 feet
Robertson Cave	Rock: Ft. Payne Chert Type of Entrance: Stoopaway Length of cave: 300 feet Depth of cave: 27 feet
Wright's Cave	Rock Type: Ft. Payne Chert Type of Entrance: stoopaway, crawl Length of Cave: 30 feet Depth of Cave: 21 feet

TABLE 1. Nineteen identified caves in Calhoun County, Alabama (Varnedoe 1973).

Cave Name	Major Features
Weaver Cave	Rock Type: Conasauga Limestone Type of Entrance: walk in, vertical pit Length of Cave: 1611 feet Depth of Cave: 27 feet
Lady Cave	Rock Type: Conasouga Limestone Type of Entrance: Horizontal artificial tunnel, vertical artificial opening Length of Cave: 304 feet Depth of Cave: 27 feet
Little Weaver Cave	Rock Type: Conasauga Limestone Type of Entrance: walk in Length of Cave: 699 feet Depth of Cave: single level
Miller's Cave	Rock Type: Copper Ridge Formation Type of Entrance: stoopaway Length of Cave: 30 feet Depth of Cave: single level
Meadows Cave	Rock Type: Ft. Payne Chert Type of Entrance: horizontal 20+ feet Length of Cave: 480 feet Depth of Cave: 27 feet

There are 6 soil associations within Calhoun County. One soil association is moderately well drained and is found in level to steep terraces. The soils in this group include Altavista, Masada, and Tate. Altavista and Masada soils developed from old general alluvium washed from Talladega slate containing some shale and sandstone. Tate soils developed from alluvium originating as Talladega slate, mica schist, and phyllite. Minor soils are Georgeville, Purdy, Robertsville, Philo, and Atkins (Harlin et al. 1961).

Another general soil association consists of deep, well-drained, level to moderately steep soils in valleys underlain by limestone and shale. Major soils within this association are Anniston, Allen, Decatur, and Cumberland. This soil association is located in the Alexandria and Choccolocco Valleys near Piedmont. Anniston and Allen soils have developed from old local alluvium washed from sandstone and shale. They occur on foot slopes of Choccolocco Mountains. Decatur and Cumberland soils have developed in thick beds of old general alluvium, or in residuum from limestone. Minor soils that occur within this association are Dewey, Etowah, Captina, Taft, and Robinson. These soils developed on uplands or stream terraces. Other minor soils are Huntington, Lindside, Philo, and Melvin.

The third general soil association consists of well drained to moderately well drained, stony or cherty soils on ridgetops, on steep slopes, and in local alluvium on foot slopes or in draws. The dominant soils are the Clarksville and Fullerton soils which formed from the residuum of cherty limestone. Minor soils are Landisburg, Lobelville, and Lee.

The fourth general soil association consists of moderately deep or shallow soils on ridgetops and steep slopes, and in local alluvium in draws. Major soils within this association are Rarden, Montevallo, and Lehew. These soils developed from residuum of shale and fine-grained, platy sandstone or limestone. Rarden soils are moderately well-drained and the Montevallo and Lehew are well drained. Minor soils are Camp and Enders, Cane, Locust, and Atkins.

The fifth soil association consists of well drained soils on stream terraces underlain by sand, gravel, and clay. The major soils are Sequatchie, Holston, and Nolichucky. These soils are well drained, and developed from thick beds of general alluvium washed from

sandstone and shale. Sequatchie soils are found in lower stream terraces. Holston soils are found in slightly higher terraces. Nolichucky soils are on steeper slopes. Minor soils occurring within this association are Montevallo, Pope, Philo, and Atkins.

Another soil association is made up of shallow, steep, and stony soils underlain by sandstone, limestone and Talladega slate. The major soil mapping units are Stony rough lands. This association occurs on broad steep uplands dissected by steep-walled drains. The largest association is located on the Choccolocco and Coldwater Mountains that lie near Anniston. The dominant land types in this association are Stony rough land, limestone; Stony rough land, sandstone; and Stony rough land, slate. Stony rough land, limestone consists of soil material and fragments of limestone. Stony rough land slate is mainly soil material and fragments of slate and quartz ranging from 3 inches to more than 4 feet in diameter. This association is mainly on the north slope of the Talladega Mountains. Minor soils include well-drained Linker and Muskingum, Jefferson, Anniston, and Allen soils (Harlin et al. 1961).

Of the 6 soil associations occurring in Calhoun County, 5 of them occur on the installation. The Attavista-Masada-Tate, Anniston-Allen-Decatur-Cumberland, Clarkston-Fullerton, Rarden-Montevallo-Lehew, and Stony rough land (Harlin et al. 1961).

3.1.3 Groundwater

There are several large ground water reservoirs in Calhoun County formed by thrust fault zones typical of the area (Ebasco Environmental 1994). Outcrop areas from the Knox Group and Weisner Formation are recharge areas for Coldwater Spring. Coldwater Spring receives groundwater recharge from fractured and weathered zones in the Chilowewe Group, solution cavities and channels in the Shady Dolomite, Conasauga Formation, and the Knox Group formations (Ebasco Environmental 1994).

Installation groundwater moves southward along the eastern side of the Choccolocco Mountains and then southwesterly at the southern end of the mountains. Under the cantonment area and Pelham Range, groundwater moves in a west-northwesterly direction toward the Coosa River (Ebasco Environmental 1994).

3.1.4 Surface Water

Calhoun County is drained by the Coosa River and its tributaries. Coosa River flows southwesterly and forms the western boundary of Calhoun County. Terrapin Creek, a tributary to the Coosa River, flows across the northeastern part of the county and furnishes water for the city of Piedmont. Nances Creek drains the area around Piedmont. Choccolocco and Coldwater creeks drain the eastern and southern parts of the county. Ohatchee, Tallahatchee, and Cane creeks are tributaries of the Coosa River (Harlin et al. 1965).

Cane Creek is the major drainage at Fort McClellan (Figure 3). Cane Creek flows east to west through Main Post and Pelham Range with headwaters from Choccolocco Mountain. Dothard Creek is another primary creek found in the cantonment area with headwaters located on and off the installation. Choccolocco Creek flows north to south and originates in the Choccolocco Mountain Corridor. Cane Creek, Cave Creek, and Dothard Creek, eventually flow into the Coosa River. (Ebasco Environmental 1994)

There are many named and unnamed ponds and lakes on the installation. Surface area of ponds and lakes on the installation totals 59 acres. Ponds and lakes in the cantonment area include Yahou Lake, Reily Lake, Cappington Ridge Lake, Duck Pond, Lake Contreras, Cane Creek Lake, Willet Springs, and Blue Hole (Ebasco Environmental 1994)

3.1.5 Climate/Atmosphere

The climate of Calhoun County, Alabama is humid, warm, and temperate, characteristic of the southern United States. It is characterized by long, hot summers and short, mild winters. The average annual temperature is 63°F. Summer temperatures can reach up to 100°F, however temperatures at or around 90°F are more common. During the winter, freezing temperatures are common, but short lived. Severe droughts and measurable snows are uncommon. Average rainfall is 53 inches while the annual snowfall accumulation is 0.5 to 1 inch. Winds are rarely strong, and frequently blow down Coosa Valley from the northeast (NOAA 1978).

3.1.6 Natural Resources

Calhoun County, Alabama falls within the Oak-Pine Forest Region of the United States. This region is characterized by the dominance of oaks and pines over much of the area. Deciduous hardwoods replace pines in typical vegetative succession in the area. Fort McClellan is within the Gulf Slope section of the Oak-Pine Forest Region.

The Gulf Slope section is in several physiographic regions and displays considerable topographic, soil, and vegetational diversity. Specifically, Fort McClellan is within the Coosa Valley, where longleaf pine occurs over 2000 feet above sea level. This Coosa Valley is a transitional region between central hardwood forest and southern evergreen forest.

Alabama occupies a central position in the Gulf Slope section. Vegetational features are diverse. Fort McClellan is within the Coosa Valley region where the transition of the oak communities of the Oak-Chestnut region to the Oak-Pine Region is gradual. Fertile valley lands are under cultivation. An increase in the amount of loblolly pine is apparent on the hills and ridges toward the southern end of the region.

Oak-pine forests dominate the area. Although the amount of land on the installation that is forested is substantial, no stands of climax forests exist on Fort McClellan. Stands of mature long-leaf pine (*Pinus palustris*) exist on the installation.

Most of Pelham Range was cleared prior to purchase by the Army in 1940. Cleared areas were used for food and livestock production. There are 3 classifications of land on the installation: improved, semi-improved and unimproved grounds. Differences in classifications depend on the amount of disturbance and management programs in place. There are 2279 acres of improved grounds, 921 acres of semi-improved grounds, and 37,991 acres of unimproved grounds (Ebasco Environmental 1994).

Tree species found on mountainous uplands at Fort McClellan include: chestnut oak (*Quercus prinus*), scarlet oak (*Q. coccinea*), and pignut hickory (*Carya glabra*). More rolling hills are vegetated by southern red oak (*Q. falcata*), post oak (*Q. stellata*), chestnut oak, black oak (*Q. velutina*), blackjack oak (*Q. marilandica*), pignut hickory, and dogwood (*Cornus florida*). American beech (*Fagus grandifolia*), tuliptree (*Liriodendron tulipifera*),

white ash (*Fraxinus americana*), maple (*Acer* spp.), white oak (*Q. alba*), American holly (*Ilex opaca*), and redbud (*Cercis canadensis*) grow in ravines between mountains and hills. Virginia pine (*Pinus virginiana*) is found along ridges, and longleaf pine is present along lower slopes of hills. Loblolly pine (*Pinus taeda*) has been planted in many areas at Fort McClellan.

Wetlands play an important role in the natural diversity of the post. Many wetlands are present on the installation including Bottomland Hardwood communities, hardwood depressions in upland communities, mixed scrub-shrub communities and herbaceous wetlands.

Canopy species in bottomland hardwood communities include: green ash (*Fraxinus pennsylvanica*), hackberry (*Celtis occidentalis*), red maple (*Acer rubrum*), American elm (*Ulmus americana*), water oak (*Quercus niger*), and sweetgum (*Liquidambar styraciflua*). Dominant riparian vegetation includes sycamore (*Platanus occidentalis*), river birch (*Betula nigra*), and black willow (*Salix nigra*). The herbaceous layer is dominated by sedges (*Carex* spp.), snakeroot (*Sanicula canadensis*), false nettle (*Boehmeria cylindrica*), green dragon (*Arisaema dracontium*), spotted jewelweed (*Impatiens capensis*), purple bluets (*Houstonia purpurea*), sensitive fern (*Onoclea sensibilis*), Virginia dayflower (*Commelina virginica*), river oats (*Chasmanthium latifolium*), sphagnum (*Sphagnum* spp.), nut rush (*Scleria triglomerata*), and woolgrass (*Scirpus cyperinus*).

Swamp dogwood (*Cornus drummondii*), alder (*Alnus serrulata*), buttonbush (*Cephalanthus occidentalis*), and seedlings of river birch, sycamore, sweet gum, and black willow dominate wetland scrub-shrub communities.

Herbaceous wetlands on the installation are dominated by woolgrass, soft rush, cattail (*Typha latifolia*), seedbox (*Ludwigia* spp.), panic grass (*Panicum dichotomiflorum*), and sedges (Ebasco Environmental 1994).

3.1.7 Wildlife

A variety of wildlife species have been documented on Fort McClellan. Commonly identified species include white-tailed deer (*Odocoileus virginianus*), eastern cottontail rabbit

(*Sylvilagus floridanus*), swamp rabbit (*Sylvilagus aquaticus*), New England cottontail rabbit (*Sylvilagus transitionalis*), gray squirrel (*Sciurus carolinensis*), eastern fox squirrel (*Sciurus niger*), opossum (*Didelphus virginiana*), beaver (*Castor canadensis*), gray fox (*Urocyon cinereoargenteus*), red fox (*Vulpes fulva*), bobcat (*Felis rufus*), wild turkey (*Meleagris gallapavo*), northern bobwhite (*Colinus virginianus*), mourning dove (*Zenaida macroura*), and many species of waterfowl (Ebasco Environmental 1994).

Some species of threatened and endangered plants and animals occur or may occur within the limits of the installation (Table 2).

3.2 SAMPLE LOCATION DESCRIPTIONS

Media samples were taken from 3 smoke range training sites, Range 24 A (Figure 2), Range 56 (Figure 3), and Battle Drill Area (Figure 3), and one reference site, the Choccolocco Creek area near Fort McClellan (Figure 2). Samples of water, soil, vegetation, bats, fish, and insects were taken from each site and analyzed for chemical constituents found in fog oil.

TABLE 2. Threatened and endangered species known to occur on Fort McClellan. Status and location are presented (Ebasco Environmental 1994).

Common Name Scientific Name	Location	Federal Status (State Staus)
White Fringless Orchid <i>Platanthera integrilabia</i>	On Fort McClellan	Candidate
Fraser's Loosestrife <i>Lysimachia fraseri</i>	On Fort McClellan	Candidate
Mohr's Barbara's-Buttons <i>Marshallia mohrii</i>	On Fort McClellan	Threatened
Blue Shiner <i>Notropis caeruleus</i>	Near Fort McClellan Reported from Choccolocco Creek	Threatened
Red-cockaded Woodpecker <i>Picoides borealis</i>	Near Fort McClellan Habitat Present (Formerly nested on the post)	Endangered (State Listed)

3.2.1 Range 24 A - Site 1

Range 24 A (40 acres) is on Main Post, southeast of the cantonment area. An intermittent tributary to the South Branch of Cane Creek runs through the middle of this range from south to north. Range 24 slopes gently to the stream from the west, and slopes up sharply on the eastern side.

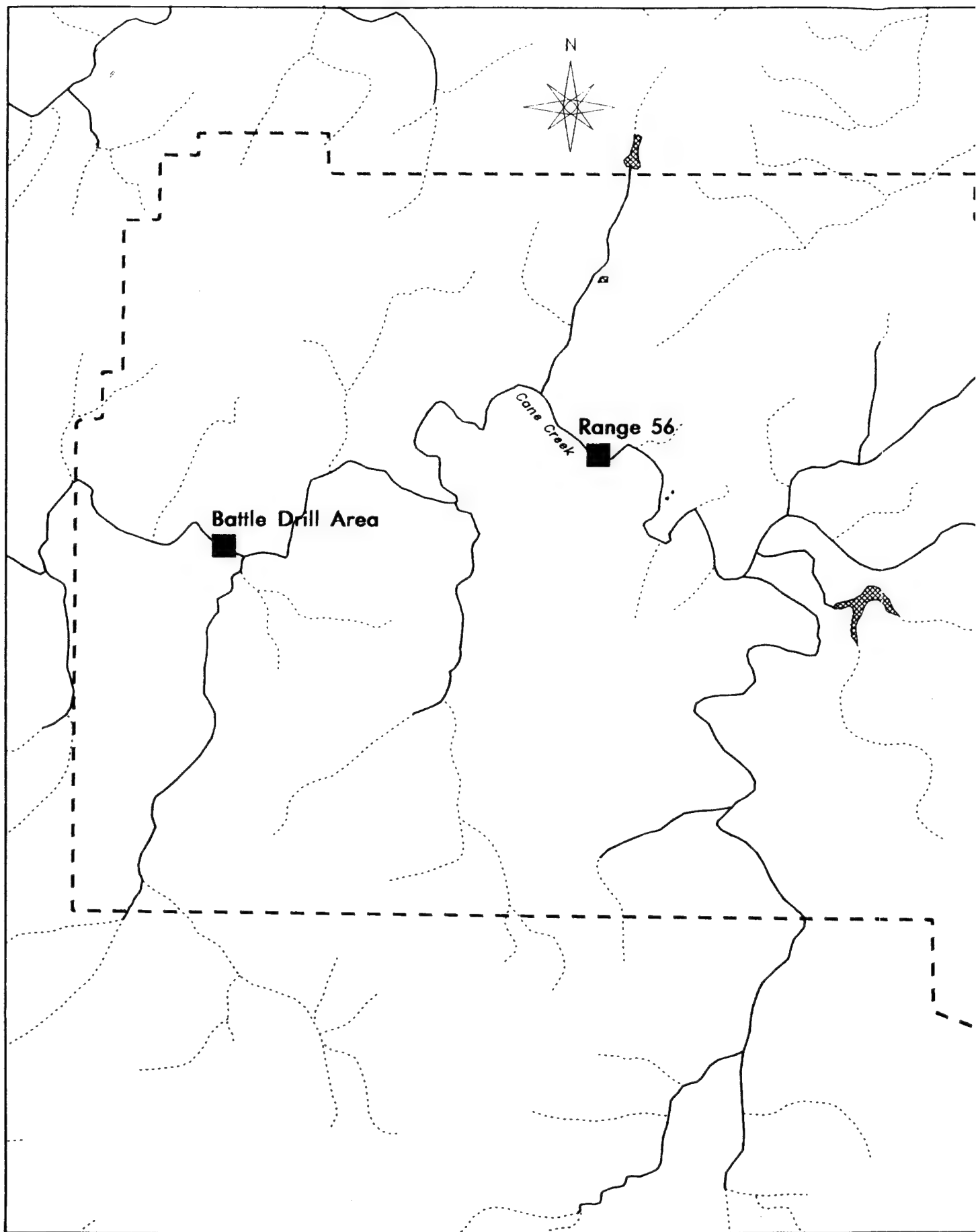
The smoke release point is in a loblolly pine stand, averaging 25 cm diameter at breast height (dbh), on the southeast corner of Range 24. East of the release area is a large mowed field that leads to a 50-foot wide strip of riparian forest along the west side of the intermittent stream. Riparian vegetation along the stream consists of small, dense maples and hickories averaging 15 cm dbh. The average width of the stream is 10 feet. West of the stream is a steep sloping forest dominated by oaks with interspersed pines averaging 25 cm dbh. Soil types at Range 24 A are Anniston and Allen stony loams.

3.2.2 Range 56 - Site 2

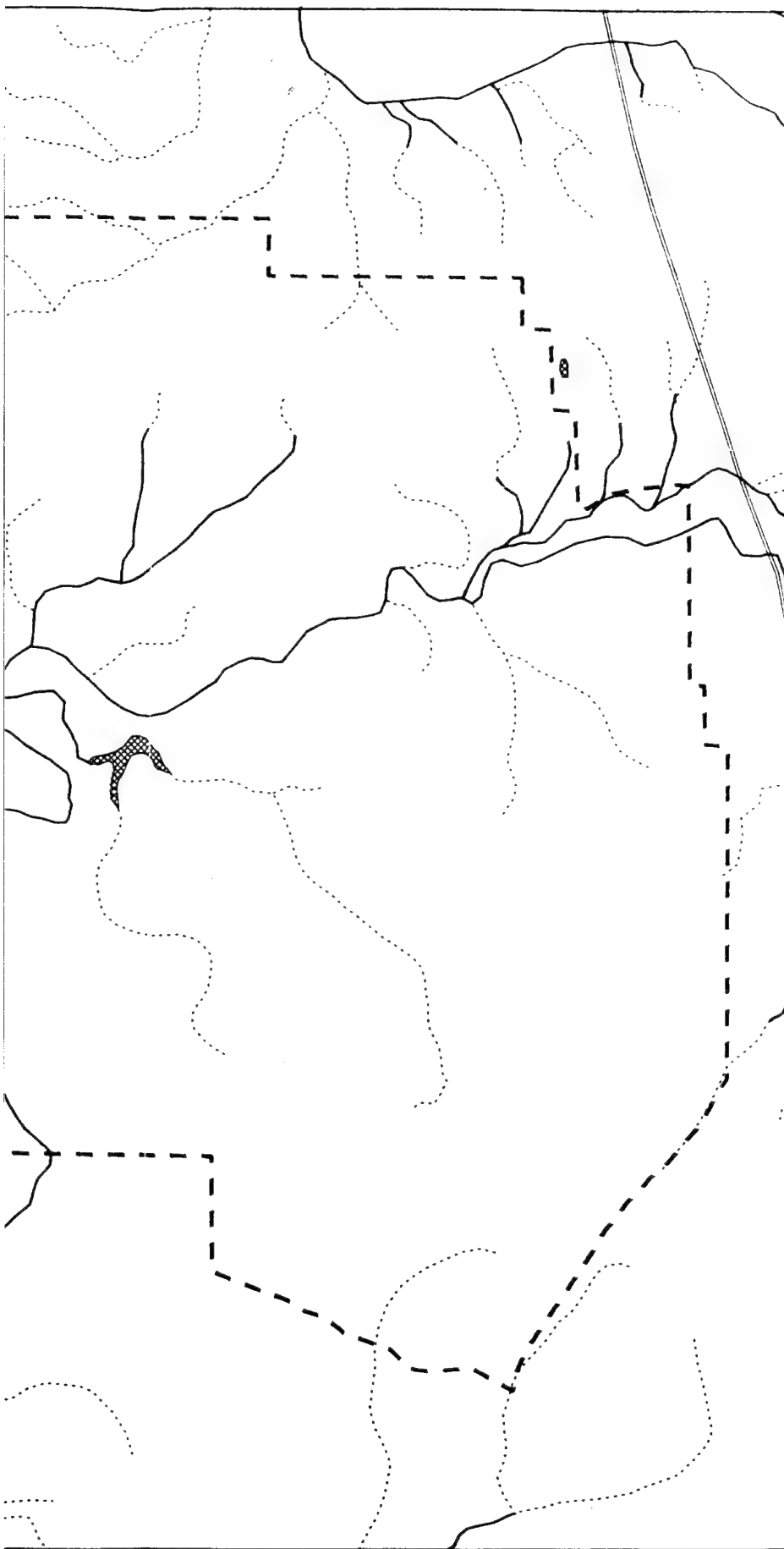
Range 56 is located on Pelham Range north of Cane Creek, southwest of the Old Air Strip, and east of Brook Mountain. Range 56 is an open field containing early successional vegetation dominated by sumac (*Rhus sp.*) and blackberry (*Rubus sp.*). The terrain where smoke is generated is relatively level, but slopes up sharply to the observation area on the east side. Soil samples were taken on the active portion of Range 56; other samples at this site were taken at Cane Creek adjacent to the range.

Cane Creek flows from east to west. At the sample site, the creek is dammed. Above the dam, the creek is 100 feet wide with a low flow rate. Below the dam, the creek flows swiftly and is 60 feet wide. Forest is fragmented throughout the area. Several woodlots exist near the creek. There are two loblolly pine plantations averaging 20 cm dbh on the north side. Riparian forest along the creek is dominated by elm, hickory, and maple with an average canopy tree diameter of 20 cm dbh. Soil types within the riparian zone of Cane Creek are Philo and Sendal silt loams. Soil types on Range 56 are Fullerton cherty silt loam, Lindside silt loam, and Rarden gravelly loam.

①









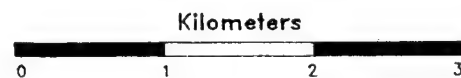
2



ENVIRONMENTAL FATE OF FOG OIL
AT FORT MCCLELLAN, ALABAMA.

FIGURE 3. Sample locations on
Pelham Range at Fort McClellan,
Alabama.

-  Chronic Fog Oil Study Sampling Location
-  Fort Boundary
-  Pond / Lake
-  Stream
-  Intermittent Stream
-  Dual Lane Road









1 centimeter = 0.5 kilometer

3D/ENVIRONMENTAL

③

ENVIRONMENTAL FATE OF FOG OIL
AT FORT MCCLELLAN, ALABAMA.

FIGURE 3. Sample locations on
Pelham Range at Fort McClellan,
Alabama.

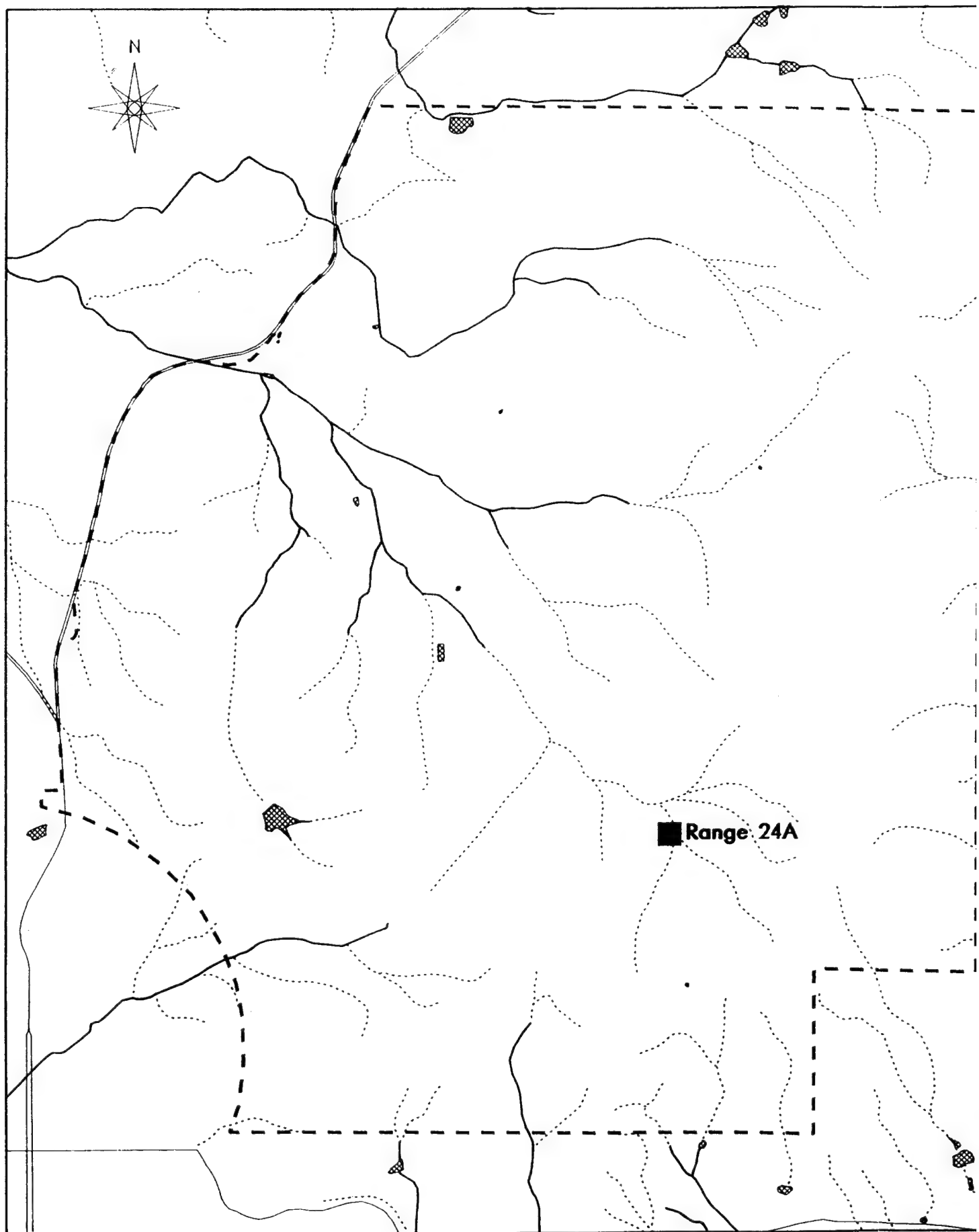
-  Chronic Fog Oil Study Sampling Location
-  Fort Boundary
-  Pond / Lake
-  Stream
-  Intermittent Stream
-  Dual Lane Road



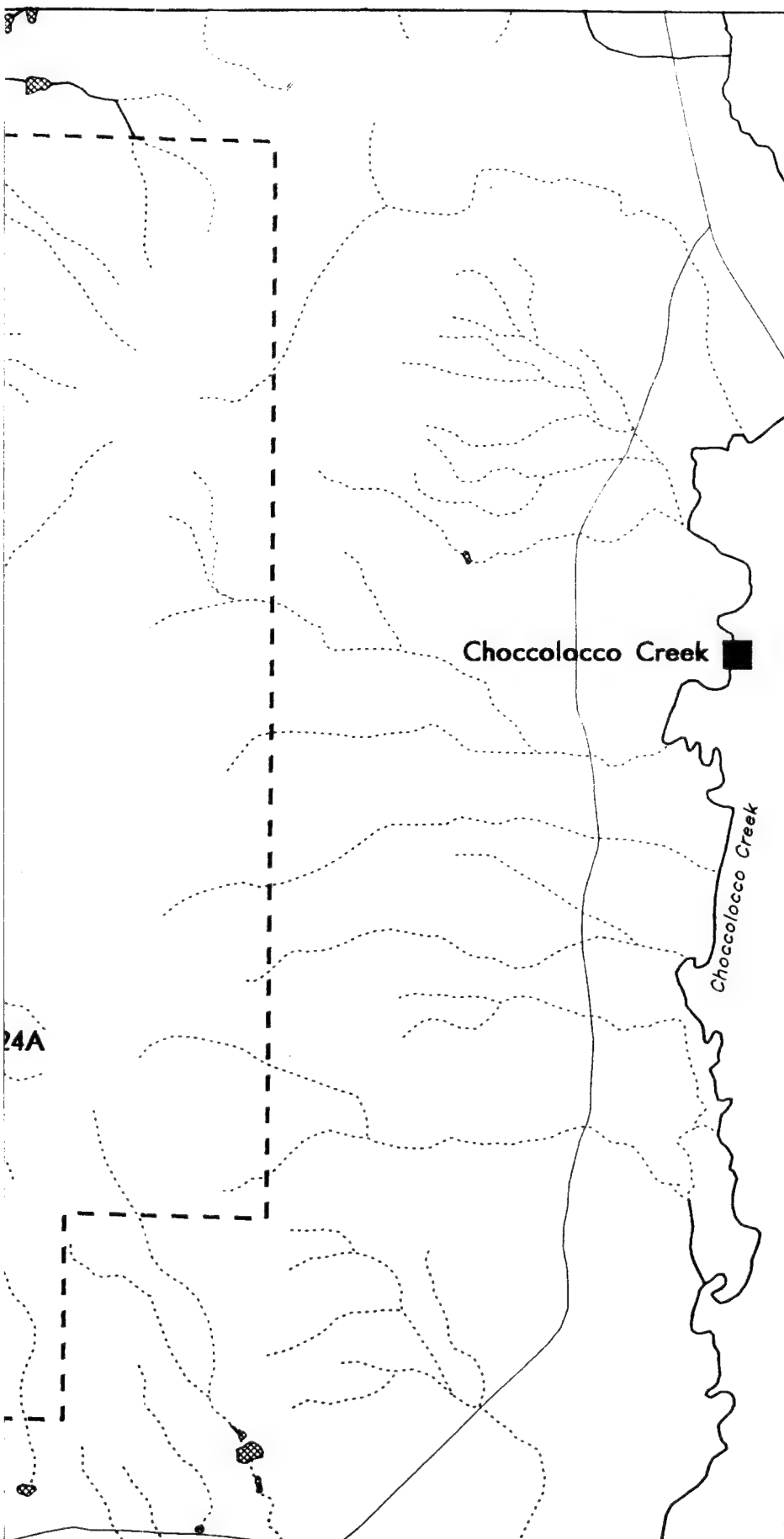
1 centimeter = 0.5 kilometer

3D/ENVIRONMENTAL

1










2



ENVIRONMENTAL FATE OF FOG OIL AT FORT McCLELLAN, ALABAMA

FIGURE 2. Sample locations on
Main Post at Fort McClellan, Alabama.

-  Chronic Fog Oil Study Sampling Location
-  Fort Boundary
-  Pond / Lake
-  Stream
-  Intermittent Stream
-  Dual Lane Road
-  Principal Road










1 centimeter = 0.5 kilometer

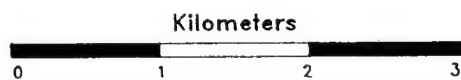
3D/ENVIRONMENTAL

③

ENVIRONMENTAL FATE OF FOG OIL
AT FORT McCLELLAN, ALABAMA

FIGURE 2. Sample locations on
Main Post at Fort McClellan, Alabama.

-  Chronic Fog Oil Study Sampling Location
-  Fort Boundary
-  Pond / Lake
-  Stream
-  Intermittent Stream
-  Dual Lane Road
-  Principal Road



1 centimeter = 0.5 kilometer

3D/ENVIRONMENTAL

3.2.3 Battle Drill Area - Site 3

The Battle Drill Area is on Pelham Range north of Cane Creek and southwest of Brook Mountain. This area is a heavily used, open field that slopes gently toward Cane Creek. The open field training area north of Cane Creek is approximately 95 acres. Limited forest exists along both sides of the creek.

The forest along the creek is dominated by poplar and sweet gum averaging 25 cm dbh. There are loblolly pines interspersed throughout the forest. The average width of Cane Creek at this location is 60 feet. A ford used by all-terrain vehicles exists 100 feet east of the bridge. Soil types in the riparian zone of Cane Creek are Philo and Stendal silt loams. The primary soil types on the Battle Drill Area are Anniston and Allen gravelly loams.

3.2.4 Choccolocco Creek - Site 4

Choccolocco Creek is approximately 3.5 km east of Main Post. The land surrounding Choccolocco Creek at the sample site is part of the Choccolocco Creek State Forest. This land is leased by Fort McClellan for some non-intrusive military training activities. Sampling was conducted on both sides of a road bridge that crosses the creek.

This stream flows from north to south. Choccolocco Creek is a fast flowing stream with many shallow pools and an average width of 50 feet. The forested floodplain is dominated by sweetgum, maple, and elm with an average canopy tree diameter of 30 cm. Pines are interspersed throughout the floodplain but occur in lower numbers than in other sample sites. Soil types on the east side of Choccolocco Creek are Altavista and Masada silt loams. The soil type on the west side of the creek is Pope silt loam.

Section 4.0

Methods

4.1 RECONNAISSANCE TRIP AND SELECTION OF SAMPLE SITES

3D/Environmental performed a reconnaissance trip to Fort McClellan, Alabama (August 1995). During this trip, we identified smoke training areas on the installation and types of training occurring on each location. Information was obtained on fog oil, smoke generators, air permits, technical manuals, field data sheets, weather data for one year, and previously conducted environmental studies. We collected samples of fog oil from a 55 gallon drum in the fog oil storage area at 24 A. A chain of custody form was completed and the samples were sent to a laboratory for analysis of compounds listed in Table 4 (Appendix A).

During reconnaissance, 3D/E visited 3 smoke training areas, Range 24 A, Range 56 and the Battle Drill Area. All 3 sites currently are used for smoke training. Previous land uses and training activities at each location were identified. We also identified potential reference locations on the installation, based on lack of anthropogenic influence, soil type, presence of aquatic habitat, and possible bat habitat in the vicinity. 3D/Environmental observed 2 smoke training exercises at Range 56 on Pelham Range.

4.2 MODELING FOG OIL DISPERSION

We used TREMS 1 (Tactical Resources Modeling Evaluation Modeling Systems) air dispersion model to estimate fog oil dispersion from each exposure site. These estimates were used in determining locations of sample sites relative to fog oil training areas.

4.3 MEDIA SAMPLING METHODS

Soil, stream sediment, and water samples may contact fog oil either through dispersion, runoff, or deposition.[. All samples were collected using standard field collection techniques. Replicate samples of soil, water, and sediment were taken every tenth sample.

Samples of insects, bats, and fish were taken at Range 24 A, Range 56, Battle Drill Area and a reference site along Choccolocco Creek. Weather data including temperature, wind speed and direction, moon phase, and percent cloud cover were recorded for each night of insect and animal collection. Organisms and tissues were collected using accepted standard practices.

4.3.1 Soil

Nineteen soil samples were collected at each site. Samples were collected near the point of chemical release. A random sampling location was selected at the reference site and then samples were taken as if it was a fog oil release point. One sample was taken 50 m upwind from the release point. Samples were taken 50 m, 100 m, and 200 m downwind from the release point. Colocated samples were taken at the 50 m location, 50 m from the location on both sides. For each sample, an auger was used to collect soil at depths of 0-3 inches, 3-12 inches, and 1-3 feet. A duplicate was taken after every tenth core sample. Parameters outlined by the EPA (EPA 1991a) were used for soil sampling. Each sample was homogenized in a stainless steel bowl with a stainless steel spoon. The sample was quartered, each portion mixed separately, and portions recombined. A sample jar was filled with homogenized soil. The soil auger, bowl, and spoon were decontaminated with distilled water after each soil sampling (EPA 1991a).

4.3.2 Surface Water

Surface water was collected following EPA guidelines (EPA 1991b) and procedures of the Hach Company (1989). At exposure sites, samples were collected near a bridge or road from which fog oil is released. At the reference site samples were collected near a bridge. At Range 56, Battle Drill Area, and the reference site, 10 samples were collected at 50 m intervals; five upstream and five downstream from the bridge or dam. The stream at Range 24 A was intermittent and samples of water were taken from 3 sites in 2 different streams near the chemical release area.

At each sampling location, stream width, bank height, water turbidity, and sediment type were recorded. Water and sediment samples were collected by entering the stream perpendicular to the sample location. When possible, samples were collected from mid-stream. Water was collected in a 1-L amber glass sample bottle. The bottle was turned upside down, lowered to mid-depth, turned upright, and raised to the surface. The sample bottle was labeled with sample number, date, and sampling site. Using the same collection method, an additional water sample was collected in a 12-oz plastic sample jar.

Flow rate of the stream was determined for the portion of the stream from which water and sediment samples were collected. Flow rate was calculated by measuring width and depth of the stream and determining travel time of a buoyant object across a known distance. Flow rate was calculated at 2 locations for each site.

Temperature, total dissolved solids, and dissolved oxygen content of samples in 12-oz plastic containers were measured in the field. Temperature was measured using a Temperature Pocket Pal Tester (Model 44450-00, Hach Company, Loveland Colorado). The range of the temperature tester is -50 to 170°C (accuracy $\pm 1^\circ\text{C}$). The probe was immersed in the sample and gently stirred until the digital display stabilized.

Conductivity was measured using a Total Dissolved Solids (TDS) Pocket Pal Tester (Model 44600, Hach Company, Loveland Colorado). The detection range of the TDS tester is 10 to 1990 TDS units with an accuracy of ± 2 at 25°C. The probe was immersed in the sample and gently stirred until the digital display stabilized.

Dissolved oxygen content was measured using CHEMets® colorimetric analysis kit (CHEMetrics, Inc., Calverton, Virginia). The kit included CHEMet® vacuum ampoules filled with solution; an instrument with which to break the ampoules, and a color chart with which to match color intensity of the solution with dissolved oxygen content of the sample. An ampoule was immersed in the sample and broken, allowing sample water to flow into the ampoule. The ampoule was mixed gently for approximately 2 minutes to introduce sample water with analytical solution. Upon mixing, the solution developed a blue color. The color of the filled ampoule was compared with a color chart to determine the parts per million (ppm) of dissolved oxygen in the water sample.

Samples collected in 12-oz plastic jars were used to measure hardness and pH 1-8 h after samples were taken. Hardness, measured as milligrams calcium carbonate per liter of water, was determined with a digital titrator and hardness kit (model HA-DT, Hach Company, Loveland Colorado). A 50 mL sample was removed from the plastic jar and procedures of the Hach Company (1989) were followed. The result was doubled to obtain total hardness per 100 mL.

Sample pH was measured using a pH Pocket Pal Tester (Model 44350-00, Hach Company, Loveland Colorado). The range of the pH tester is 0.0-14.0 pH and accuracy is ± 0.2 pH. Prior to testing each sample, the pH tester was calibrated using pH 7.0, 4.0, and 10.0 solutions (Hach Company, Loveland Colorado). The tester was immersed in 7.0 buffer solution and then immersed in the sample.

Samples in plastic jars were discarded after pH and hardness were analyzed. Samples in 1-L glass bottles were sealed and transported to a laboratory within 24 hours of collection in a cooler containing ice.

4.3.3 Stream Sediment

Stream sediment was collected following EPA guidelines (EPA 1991b). Sample locations were coincident with water sample locations. A shovel was used to scoop sediment from beneath the water into an 8 ounce glass sample jar with a Teflon®-lined lid. Large rocks were removed from sediment samples. Jars were labeled with sample site, sample number, and date.

4.3.4 Vegetation

Vegetation sampling included collection of tissue samples for laboratory analysis and transect sampling to determine species composition. Tissue samples were analyzed to identify fog oil components.

Three tissue samples were collected from each site. At each exposure site, 3 live trees near chemical release areas were selected. At the reference site, 3 live trees were selected. From each tree, 6 in² of bark were scraped into a whirl pak®. Ten leaves from the tree were removed and included in the same whirl pak. Gloves were worn to avoid contamination. The species from which samples were taken was identified and samples were transported in a cooler containing dry ice.

At each site, two 100 m transects were established along identical bearings to minimize effects of sunlight exposure on plant growth. Diameter at breast height (dbh), tree height, and species were recorded for every tree greater than 1.8 m tall within 1 m of the transect. This data was used to compare exposure sites with the reference site.

4.3.5 Insects

Insects were collected for contaminants analysis using black (ultraviolet) and white (fluorescent) light traps. The traps consist of a light source surrounded by Plexiglas dividers over a funnel with a mesh bag that retains the insects alive. Traps were suspended at least 2 m in the air to capture night flying insects. One black and one white light trap were deployed at dusk (1900-2130 h) for 2 nights at each exposure site. Insects were collected simultaneously at the reference site. Between 0200-0320 h, traps were emptied into whirl paks®, and samples were weighed. Samples were stored and shipped on dry ice.

Insects collected for analysis of fog oil hydrocarbons were to be split, one half for analysis and one half for characterization of insect communities at the 4 sites. We were unable to collect sufficient samples of insects to split the samples. Therefore, an additional night of trapping was performed to provide insects that could be used to characterize insect communities. One night of trapping does not provide enough data to draw statistical inferences. Therefore, the information presented for insects communities should be considered as baseline information only. One black and one white light trap were deployed

at each site between 1745 h and 2015 h. Insects were collected between 0755 h and 0940 h the next day. Samples were labeled and returned to 3D/E. Insects were identified to Order. For each site, the Shannon-Weiner Diversity Index and evenness of species were calculated. The Jacard Similarity Index was used to compare composition of insect species at the reference site with each exposure site.

4.3.6 Bats

Bats were simultaneously captured at the reference and exposure sites for contaminants analysis. Mist-netting followed procedures outlined in the 1991 Indiana/Gray Bat Recovery Team Meeting Notes. Nets were stacked 6.1 or 9.1 m high and raised from sunset until at least 0200 h. Nets were positioned from the ground or water to the tree canopy, with enclosing foliage or stream banks on each side. Nets were checked every 20 minutes and care was taken to avoid disturbance within 50 m of nets. Mist-netting was conducted on nights with little or no precipitation, ambient temperature $>10^{\circ}\text{C}$, and light or no wind. Netting was not conducted under full moon, unless there was at least 50% cloud or canopy cover.

Two sites were netted each calendar night. Three nets were deployed at each exposure site per night, for two consecutive nights. This yielded a total of 6 net-nights per exposure site. Three nets were operational at the reference site on all nights of the survey, yielding a total of 12 net-nights. At Range 56, Battle Drill Area, and the reference site, nets were erected across streams. At Range 24 A, vegetation was too dense to permit net placement over the stream; nets were erected on a nearby dirt road.

Bats were removed from nets and processed. Protected bats (e.g., gray bats) were released unharmed at the capture site. We recorded the following data for each bat: species, age, sex, reproductive condition, right forearm length, weight, time of capture, capture height in net, and travel direction. Gray bats were marked with a numbered, white plastic armband before being released. At each sample site, up to 8 non-endangered bats were collected, anesthetized (with CO_2), and euthanized following accepted procedures (NIH 1985). These bats were processed for tissue analysis.

4.3.7 Fish

We seined to sample fish because it is effective in small streams or pools with little cover (EPA 1989). Seines were approximately 15 ft wide, and made of nylon netting with wooden poles on each end. We sampled fish at 2 exposure sites: Battle Drill Area and Range 56. We also seined the Choccolocco Creek reference site. All streams were small and smooth bottomed with pools and riffles. We could not seine the intermittent stream at Range 24 A. Collection, processing, and analysis were done following EPA (1989) and Krueger et al. (1988) standards.

4.4 SAMPLE PRESERVATION AND SHIPMENT

Bats and insects were euthanized and preserved with dry ice. Any large insects captured during bat mist netting surveys were collected by hand and placed in whirl paks. Insects caught in nets were weighed and labeled separately. Up to 8 non-endangered bats per site were placed in a dry ice chamber for 15 minutes for euthanasia. The bats were weighed and placed in sample bottles. Fecal samples were collected from each gray bat captured. Fecal samples were stored and transported in dry ice. Following collection, samples were sealed and shipped in dry ice the next day. Water and stream sediment samples were sealed and transported in a cooler containing ice.

4.5 LABORATORY ANALYTICAL METHODS

Over 200 samples were collected at Fort McClellan (Table 3). We reviewed the literature to determine components of fog oil which might be found in media samples (Table 4). Samples were analyzed for aromatic residues of fog oil.

Results of these analyses are in Appendix A. Gas chromatograph/mass selective detector (GC/MSD) confirmation of selected samples was conducted to confirm residues found by flame ionization detector (FID). Generally, 2 samples from each matrix were selected (one from the exposure site and one from the reference site). Samples were selected based on the number of spikes indicating presence of fog oil components as well as the apparent concentration of any selected compound. Confirmation results are in Appendix A.

TABLE 3. Number and type of laboratory samples from Fort McClellan.

Medium	Number of Samples
Soil	78
Bats	20
Insects	12 (35) ¹
Sediment	35
Guano	3 (8) ¹
Bark/Leaves	12
Water	29
Fish	13

¹ The number in () indicates the actual number of samples taken. The guano and insect samples were composited, respectively, so that all samples collected on each night would be analyzed as a single sample.

TABLE 4. Fog oil hydrocarbons with long environmental residence time selected for analysis. Samples were analyzed for these compounds and their isomers.

Fog Oil Components	
Biphenyl	Fluorene
9-Methylanthracene	2,6-Dimethylnaphthalene
4,4'-Dimethylbiphenyl	3,6-Dimethylphenanthrene
1,3-Dimethylnaphthalene	1-Methylfluorene
2-Ethylanthracene	1,2-Dimethylnaphthalene
Phenanthrene	9,10-Dimethylanthracene
2,3,5-Trimethylnaphthalene	Anthracene
Hexachloroethane	Hexadecane
2-Methylphenanthrene	

Attempts were made to characterize fog oil. The parent oil was diluted in hexane to a concentration of 1% and injected on a GC/FID using a DB-5. The oil was cleaned using a silicon (Si) column and the extract injected. A second aliquot of the 1% solution was injected on a GC/MSD in Scan mode and the ion range 75-76 amu (aromatic ring) was monitored. The absence of peaks in this mass range indicate there are no aromatics in fog oil. Standards were injected to demonstrate the detection limits with the MSD. It was determined that a 5 µg/mL standard would give the minimum quantifiable response. Matrix interferences may increase this level (see Appendix A).

Fog oil was analyzed with ultraviolet light. A 0.001% solution was prepared and scanned from 200 to 400 nm. The lack of an absorbance peak ~ 250 nm indicates there are no aromatics in the fog oil (Appendix A).

Fog oil was analyzed by infrared light (IR). Neat fog oil was placed on an IR card (Figure 6). Triplicate peaks at 2850 - 2960 cm^{-1} as well as peaks at 1375 cm^{-1} and 1460 cm^{-1} are characteristic of alkanes. There are no peaks at 3000 - 3100 cm^{-1} (aromatic) or at 3020 - 3080 cm^{-1} and 1640 - 1680 cm^{-1} (alkenes), indicating no aromatics or alkenes in fog oil. To determine the detection limits for the IR, 1 mL of fog oil was spiked with various levels of 9-methyl anthracene and diluted to 10 mL with freon and analyzed using a cuvette with a 1 cm path length. The detection limit (semi-quantitative) for total aromatics in fog oil was 5% (Appendix A).

4.4.1 Soil and Sediment (Based on EPA Methods 8100, 3540, and 3630)

A 10 g soil sample was weighed into a 16 ounce jar with a Teflon-lined lid and 30 g of Na_2SO_4 and 200 mL of acetone:hexane were added. The mixture was mechanically shaken for 1 hour filtered through GF/A, and evaporated to < 5 mL. A 10 g Si column was prepared by transferring a slurry of Si with methylene chloride to a glass column with a glass wool plug in the bottom. A small amount (1-2 cm) of Na_2SO_4 was added to the top and methylene chloride was allowed to drain through the column. The column was rinsed with 40 mL of pet ether. The sample was loaded onto the column. The flask was rinsed with 2 mL cyclohexane and the rinse transferred to the column, with these load fractions discarded. The column was eluted with 75 mL of pet ether and 75 mL of methylene chloride (collected separately). These two fractions were rotary evaporated to < 5 mL and transferred to calibrated (1 mL) test tubes. Cyclohexane (1 mL) was added and the sample blown down to 1 mL.

4.4.2 Water (EPA Method 525)

A C_{18} column was conditioned with 5 mL each methanol, methylene chloride, methanol, and water. Approximately 50 g of NaCl was added to a 500 mL water sample. Some samples required prefiltering through Whatman GF/A. The sample was aspirated through the SPE column under vacuum. The column was eluted with 6 mL methylene

chloride:pet ether (50:50). Cyclohexane (1 mL) was added and the sample blown down to 1 mL.

4.4.3 Insects, Bats, Guano, Fish, Bark/Leaves

The EPA has not established standard methods for sampling and analyzing tissue samples. However, these matrices were extracted using the soil/sediment methodology with modifications for extraction and additional cleanup.

Ten grams of fish and vegetation tissue were analyzed for each sample. For all other biological matrices, we used the entire sample for analysis. Na_2SO_4 was added to each sample at 4 times the sample weight. Samples were extracted twice with 100 mL methylene chloride and vacuum filtered through Whatman GF/A. Samples were rotary evaporated to ~ 5 mL and the volume adjusted to 10 mL with methylene chloride. A 5-mL aliquot was loaded onto a GPC column. The collected fraction was evaporated and solvent exchanged to cyclohexane. EPA Method 3630 (Silica Gel Cleanup) was used to clean the sample. A 10 g Si column was prepared by making a slurry of Si with methylene chloride. This slurry was transferred to a glass column with a glass wool plug in the bottom. A small amount of Na_2SO_4 (1-2 cm) was added to the top of the Si. The methylene chloride was allowed to drain through the column. The column was rinsed with 40 mL of pet ether and the sample loaded onto the column. The flask was rinsed with 2 mL of cyclohexane and the rinse transferred to the column. These load fractions were discarded. The column was eluted with 75 mL of pet ether and 75 mL of methylene chloride (collected separately). These two fractions were rotary evaporated to < 5 mL and transferred to calibrated (1 mL) test tubes. Cyclohexane (1 mL) was added and the sample blown down to 1 mL.

4.4.4 Mass Spectrophotometry Confirmation

Two samples from each matrix were selected (one from a treated site and one from the reference site). The samples were selected based on the number of detections as well as the apparent concentration of any selected compound. The MSD was run in select ion monitoring mode to increase sensitivity ~ 500 times and reduce problems associated with interfering coextractives.

4.4.5 Quality Assurance and Control Samples

We prepared a field replicate sample of soil, surface water, and sediment every tenth sample. No field blanks were prepared because the preservative was either dry or wet ice. The laboratory prepared matrix spike samples, method blanks, and equipment blanks per their internal Quality Assurance policy.

4.6 STATISTICAL ANALYSIS

Statistics were performed using SPSS for Windows Version 6.1. We used *t*-tests to compare chemical presence between Site 1 and Site 4, Site 2 and Site 4, and Site 3 and Site 4. We used one-way ANOVA to look for relationships among all 4 sites. Replicate observations were omitted from analyses because they would unfairly weight those sampling points that were replicated.

For the soil, surface water, sediment, and vegetation chemical analyses, a value of 0 was used if the data provided a detection limit rather than a specific value (for example, "<0.05"). This is a valid technique because our objective was to determine differences between sites, not to determine absolute amount of chemical present. Using 0 maximizes differences between sites with no chemical present and those with chemicals present. For example, if Site 1 has 0.051 ppm chemical present and Site 4 has 0 ppm, using the detection limit of 0.05 as the value for Site 4 would result in no difference between the two sites, whereas using 0 results in a difference. Using 0 minimizes the risk of not finding a difference when in fact there is one. The 0 value was used only for difference computations; raw data was presented as reported by laboratory analysis, with detection limits.

Analysis of soil, surface water, sediment, and vegetation was done using detection limit values to see if results changed and what these differences were. However, we summarized results only with comparisons using 0 values. For the soil data, we also did the analysis separating the samples into three equal depths.

In animal tissue analysis, detection limit values were used because detection limit values were inconsistent across all observations within a given group (for example:

detection limits among insect samples differed because of differences in sample sizes and different individuals conducting analyses).

4.7 SITE SIMILARITY INDEXES

We calculated two indices of similarity to compare transect and insect data from the same site and between exposure sites and the reference site. Both the Jacquard and Simpson index of similarity are calculated by using derivations of the formula described below. The closer a similarity index is to 1.0, the more similar the two samples are in species composition.

$$S = \frac{2C}{A + B}$$

Where:

- S = Index of Similarity
- C = Number of species common to both sites
- A = Number of species in site A sample
- B = Number of species in site B sample

4.8 FOG OIL SMOKE SAMPLES

On 2 and 3 October 1995, 3D/Environmental collected 12 samples of fog oil (smoke) from operating M157 and M56 generators at Fort McClellan, Alabama. Smoke samples were drawn by vacuum into 6-L Summa Air Canisters®. Summa Air Canisters were leased from Grasbey New Technologies of Smyrna, Georgia. Four samples were taken at each of the following locations: Range 24 A, Range 56, and the Pelham Range Vehicle Maintenance Facility (Table 5). One background sample was taken at each location 5 minutes prior to fog oil generator smoke production. Air temperature was recorded for all samples. Samples were analyzed by methods similar to those previously described in this document (Section 4.4) using a GC/MSD. Chromatograms of analysis are presented in Appendix F.

TABLE 5. Location, distance, and type of generator information for fog oil smoke samples.

Sample Number	Location	Distance	Generator
1	24 A	0 m*	XM 56
2	24 A	10 m	XM 56
3	24 A	20 m	XM 56
4	24 A	30 m	XM 56
5	Range 56	0 m*	M157
6	Range 56	0 m**	M157
7	Range 56	10 m	M157
8	Range 56	20 m	M157
9	Vehicle Maintenance Facility	0 m*	M157
10	Vehicle Maintenance Facility	10 m	M157
11	Vehicle Maintenance Facility	20 m	M157
12	Vehicle Maintenance Facility	20 m	M157

*sample canister was placed at the base of the generator

**sample canister was placed on top of generator unit near the fog oil smoke exit port

Section 5.0

Results/Discussion

5.1 INTRODUCTION

The results of chemical analyses are organized by media into tables in Appendix A. The following designations and site locations were used to identify samples from the 4 sites in this study.

- Site 1 = Range 24A (exposure site)
- Site 2 = Range 56 (exposure site)
- Site 3 = Battle Drill Area (exposure site)
- Site 4 = Choccolocco Creek (reference/control site)

We developed a sample identification scheme to distinguish samples by media, sample location, and sample order (Appendix A). Each tissue sample was given a 2 letter designation followed by the site number. TM was used for tissue mammal, TI was tissue insect, TF was tissue fish, TV was tissue vegetation, and TM# - G# indicates the site and bat number the guano sample was taken from. For example, TM1 - 12 is the tissue sample from the 12th bat caught at site 1. SW# designates surface water samples from site # and SD# represents sediment samples. Soil samples were taken at three depths. SU# was for 0" - 3", SM# was for 3" - 12", and SB# was 12" to 3' depths.

The following results and discussion summarize the statistical analysis performed on the media samples. One important aspect of the study was to compare results from exposure sites (sites 1, 2, and 3) to the reference site (site 4). Exposure site samples with

detectable concentrations of hydrocarbons were compared to the reference site to determine if any detected difference was statistically significant. Analytical detection limits were mg/L for all media except surface water. The detection limit used for surface water analysis was in $\mu\text{g/L}$ because drinking water tests methods were used. Drinking water standards and test methods have very low detection limits.

We also include a summary of statistical tests used to describe similarity of vegetation and insect communities between exposure sites and the reference site. When selecting a reference site, we tried to match soil types, percent canopy cover, vegetation, topography, water quality, etc.. Because limited sites on Fort McClellan were not impacted by training, our selection of the reference site was biased. The most suitable reference site was a section of Choccolocco Creek with a heavily traveled road and bridge crossing it. While no fog oil training had been conducted at this site, limited, non-intrusive training had occurred at this site. We were unable to determine the number of times this type of training had taken place at the reference site.

The following analysis focuses on differences in concentrations of hydrocarbons between the exposure sites and reference site. Comparisons of hydrocarbon concentrations between exposure sites and the reference site allow for the detection of high concentrations of hydrocarbons, with the reference site concentrations serving as background or ambient concentrations that could be found any where on the installation. One difficulty with this study is determining the exact source of hydrocarbons detected in samples. A causal relationship between exposure site/increase in fog oil hydrocarbons vs. reference site/little or no fog oil hydrocarbons may not be attributed solely to fog oil training. The exposure sites are for other types of training besides fog oil. Other obscurants such as hexachloroethane, brass, and terephthalic acid have been released at these sites. Different field and training maneuvers have been conducted at the exposure sites. The reference site has had non-intrusive training conducted there. Ideally, in order to compare exposure sites and the reference site, each exposure site should have had only fog oil smoke training conducted there and the reference site should have no training.

No fog oil (as whole oil) was detected in the samples. This indicates that fog oil (as a whole oil) is not accumulating in the environment. Analytical techniques and

methods used to test samples would have detected whole fog oil. Therefore, the absence of fog oil hydrocarbons, low concentrations found in a few samples, and the lack of whole fog oil in all samples, provide support that fog oil is not and will not bioaccumulate, bioconcentrate, or remain in the environment for any period of time. Hydrocarbons detected in the reference and exposure site samples are either natural background or from sources other than fog oil.

5.2 SOIL

Chemicals for which we analyzed (Table 4) either did not appear in soil samples, or were present in the same concentrations at exposure sites and the control site (Table 6). For the few chemicals where significant differences were found, the control site had greater concentrations of most chemicals. 2-Ethylanthracene, 1-Methylflourene, and 9,10-Dimethylantracene showed differences between the exposure site and the control site with the control site having more of the chemicals. 1-Methylflourene and 9,10-Dimethylantracene appear to be concentrated in the surface layer of the control site. 2-Ethylanthracene appears to be in the two top layers of the control site. The only exception was that the middle layer of Site 2 had more ($p < 0.10$) Hexadecane than the control site.

Chemical concentrations detected in soil samples from exposure sites were very low and not of concern. These low concentrations indicate no fog oil hydrocarbons are concentrating in the soil. When compared to the reference site, most exposure site chemical concentrations were lower. The reference site may have had greater detectable concentrations of fog oil hydrocarbons due to exhaust by-products from vehicles on the heavily traveled road or from stormwater runoff of contaminants on this road. Another possible source of hydrocarbons at the reference site could be from previous training material contamination.

5.3 SURFACE WATER AND STREAM SEDIMENT

Most chemicals either did not appear in the water samples or were present in the same amounts at the exposure sites and the control site (Table 7). For the chemicals where significant differences were found, all differences showed the control site having

TABLE 6. Results of fog oil component analysis for soil samples from all sites.

SOIL	Site 1 v. Site 4 (t-test)	Site 2 v. Site 4 (t-test)	Site 3 v. Site 4 (t-test)	All Sites (ANOVA)	Surface (DEPTH=1, Site 1 v. Site 4 (t-test)	Surface (DEPTH=1, Site 2 v. Site 4 (t-test)	Bottom (DEPTH=3, Site 2 v. Site 4 (t-test)	Bottom (DEPTH=3, Site 3 v. Site 4 (t-test)	Surface (DEPTH=1, Site 3 v. Site 4 (t-test)	Middle (DEPTH=2, Site 3 v. Site 4 (t-test)	Bottom (DEPTH=3, Site 3 v. Site 4 (t-test)	Surface (DEPTH=1, All Sites (ANOVA)	Middle (DEPTH=2, All Sites (ANOVA)	Bottom (DEPTH=3, All Sites (ANOVA)
Biphenyl	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dimethylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dimethylnaphthalene	=	=	=	=	=	=	=	=	=	=	=	=	=	=
1,2-Dimethylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,5-Trimethylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexadecane	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4-Dimethylbiphenyl	=	NA	NA	=	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1-Methylfluorene	4>1**	4>2**	4>3***	4>1>2>3***	4>1**	4>2**	=	4>3**	=	4>3**	=	4>1=2=3***	4>1>2>3**	=
Phenanthrene	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Anthracene	=	2>4*	NA	=	NA	NA	2>4*	NA	NA	NA	NA	NA	=	NA
2-Methylphenanthrene	=	=	=	=	NA	=	=	=	=	=	=	=	=	NA
9-Methylanthracene	=	=	=	=	NA	=	=	=	=	=	=	=	=	NA
3,6-Dimethylphenanthrene	=	=	=	=	NA	=	=	=	=	=	=	=	=	NA
2-Ethylanthracene	4>1***	4>2***	4>3***	4>1>2>3***	4>1**	4>2**	=	4>3**	=	4>3**	4>3***	4>1>2>3***	4>1>2>3**	4>1>2>3***
9,10-Dimethylanthracene	4>1*	4>2*	4>3*	4>1=2=3**	NA	4>2*	NA	4>3*	NA	4>3*	NA	4>1=2=3**	NA	NA
Hexachlorothene	=	=	=	=	=	4>2*	=	=	=	4>3*	=	=	=	=

Site numbers refer to sites (1=Range 24A, 2=Range 56, 3=Battle Drill Area, and 4=Choccolocco Creek)

NA - There were either no observations or no variance in the observations (all chemical concentrations were below detection limit)

= - There is no statistical difference between the sites;

*** - Statistically significant difference (p < 0.01);

** - Statistically significant difference (p < 0.05);

* - Statistically significant difference (p < 0.10);

> - Indicates which site had the greater value.

TABLE 7. Results of fog oil component analysis for water samples from all sites.

SURFACE WATER	Site 1 v. Site 4 (t-test)	Site 2 v. Site 4 (t-test)	Site 3 v. Site 4 (t-test)	All Sites (ANOVA)
Chemical				
Biphenyl	NA	NA	NA	NA
2,6-Dimethylnaphalene	NA	NA	NA	NA
1,3-Dimethylnaphalene	NA	NA	NA	NA
1,2-Dimethylnaphalene	NA	NA	NA	NA
2,3,5-Trimethylnaphalene	=	=	=	=
Hexadecane	4>1**	4>2**	4>3**	4>1=2=3**
Fluorene	4>1**	4>2*	=	=
4,4'-Dimethylbiphenyl	NA	NA	NA	NA
1-Methylfluorene	=	=	=	=
Phenanthrene	NA	=	=	=
Anthracene	=	=	=	=
2-Methylphenanthrene	NA	NA	NA	NA
9-Methylanthracene	4>1**	=	4>3**	=
3,6-Dimethylphenanthrene	NA	NA	NA	NA
2-Ethylanthracene	4>1**	4>2**	4>3**	4>1=2=3**
9,10-Dimethylanthracene	4>1*	4>2*	4>3*	4>1=2=3**
Hexachloroethane	NA	NA	NA	NA

Site numbers refer to sites (1=Range 24A, 2=Range 56, 3=Battle Drill Area, and 4=Choccolocco Creek)

NA - There were either no observations or no variance in the observations (all chemical concentrations were below detection limit)

= - There is no statistical difference between the sites;

*** - Statistically significant difference ($p < 0.01$);

** - Statistically significant difference ($p < 0.05$);

* - Statistically significant difference ($p < 0.10$);

> - Indicates which site had the greater value.

more of the chemical. General characteristics of stream water and sediments are listed in Appendix B.

The control site had greater concentrations of Hexadecane, 2-Ethylanthracene, and 9,10-Dimethylanthracene than all exposure sites. The control site had more Fluorene than Site 1 or Site 2, and the control site had more 9-Methylanthracene than Site 1 or Site 3.

Few significant differences in concentrations were found in sediment analyses (Table 8). Hexadecane was present in greater quantities at the control site than Site 1. Phenanthrene was more prevalent at Site 3 than the control ($p < 0.10$). 2-Ethylanthracene was present in greater quantities at Site 2 than the control site ($p < 0.01$), but the control site had greater concentrations than Site 3 ($p < 0.10$).

TABLE 8. Results of fog oil component analysis for sediment samples from all sites.

SEDIMENT	Site 1 v. Site 4 (t-test)	Site 2 v. Site 4 (t-test)	Site 3 v. Site 4 (t-test)	All Sites (ANOVA)
Chemical				
Biphenyl	NA	NA	NA	NA
2,6-Dimethylnaphalene	NA	NA	NA	NA
1,3-Dimethylnaphalene	NA	NA	NA	NA
1,2-Dimethylnaphalene	NA	NA	NA	NA
2,3,5-Trimethylnaphalene	NA	NA	NA	NA
Hexadecane	4>1***	=	=	=
Fluorene	NA	NA	NA	NA
4,4'-Dimethylbiphenyl	NA	NA	NA	NA
1-Methylfluorene	=	=	=	=
Phenanthrene	NA	NA	3>4*	3>4=1=2**
Anthracene	=	=	=	=
2-Methylphenanthrene	=	=	=	=
9-Methylanthracene	NA	NA	NA	NA
3,6-Dimethylphenanthrene	=	NA	NA	1>4=2=3*
2-Ethylanthracene	=	2>4***	4>3*	1>2>4>3**
9,10-Dimethylanthracene	NA	NA	NA	NA
Hexachloroethane	=	=	=	=

Site numbers refer to sites (1=Range 24A, 2=Range 56, 3=Battle Drill Area, and 4=Choccolocco Creek)

NA - There were either no observations or no variance in the observations (all chemical concentrations were below detection limit)

= - There is no statistical difference between the sites;

*** - Statistically significant difference ($p < 0.01$);

** - Statistically significant difference ($p < 0.05$);

* - Statistically significant difference ($p < 0.10$);

> - Indicates which site had the greater value.

Chemical concentrations detected in surface water and sediment samples from exposure sites were very low and not of concern. These low concentrations indicate no fog oil hydrocarbons are concentrating in surface water or sediment at exposure sites. When compared to the reference site, most exposure site chemical concentrations were lower. The reference site may have had greater detectable concentrations of fog oil hydrocarbons due to the gasoline/diesel by-products from exhaust of vehicles traveling on the road crossing the creek. Another source could be from training conducted at the site.

We performed water quality field tests at each surface water sample location and described the appearance of sediment samples. The purpose of this sampling was to provide additional information about stream characteristics, and to provide a tool to compare water chemistry at each site in case we found high concentrations of hydrocarbons at one particular site. The pH ranged from 6.4 to 8.4 (Appendix B). Sites 4 and 1 had lower TDS, hardness, and turbidity than sites 2 and 3 (Appendix B). Overall, water quality appeared to be good at all sample locations.

5.4 VEGETATION

There was no statistically significant difference in concentrations of fog oil hydrocarbons in samples from exposure sites and the reference site (Table 9). The two exceptions were 1,3-Dimethylnaphthalene where Site 1 had more than the control site ($p < 0.05$), and 9,10-Dimethylantracene where Site 1 had more than the control site ($p < 0.10$).

Chemical concentrations detected in bark and leaf samples from exposure sites were very low and not of concern. These low concentrations of hydrocarbons indicate no fog oil hydrocarbons are concentrating in plant tissue at exposure sites. When compared to the reference site, most exposure site chemical concentrations were lower. The reference site may have had greater detectable concentrations of hydrocarbons because of vehicles and their exhaust. A heavily traveled road crosses the creek on the site. Another source could be from non-fog oil training that was conducted on the site.

TABLE 9. Results of fog oil component analysis for plant tissue samples from all sites.

VEGETATION				
Chemical	Site 1 v. Site 4 (t-test)	Site 2 v. Site 4 (t-test)	Site 3 v. Site 4 (t-test)	All Sites (ANOVA)
Biphenyl	=	=	=	=
2,6-Dimethylnaphalene	=	=	NA	=
1,3-Dimethylnaphalene	1>4**	=	=	=
1,2-Dimethylnaphalene	=	=	=	=
2,3,5-Trimethylnaphalene	=	=	=	1>2>3>4*
Hexadecane	=	=	=	=
Fluorene	=	=	=	=
4,4'-Dimethylbiphenyl	=	=	=	=
1-Methylfluorene	=	=	=	=
Phenanthrene	=	=	=	=
Anthracene	=	=	=	=
2-Methylphenanthrene	=	=	=	=
9-Methylanthracene	=	=	=	=
3,6-Dimethylphenanthrene	=	=	=	=
2-Ethylanthracene	=	=	=	=
9,10-Dimethylanthracene	1>4*	=	=	1>2>3>4**
Hexachloroethane	NA	NA	NA	NA

Site numbers refer to sites (1=Range 24A, 2=Range 56, 3=Battle Drill Area, and 4=Choccolocco Creek)

NA - There were either no observations or no variance in the observations (all chemical concentrations were below detection limit)

= - There is no statistical difference between the sites;

*** - Statistically significant difference ($p < 0.01$);

** - Statistically significant difference ($p < 0.05$);

* - Statistically significant difference ($p < 0.10$);

> - Indicates which site had the greater value.

Descriptions of tree species and tree diameters in belt transects at sample sites are contained in Appendix C. Shannon Diversity Indexes calculated revealed little diversity in all transects (Table 10). The Shannon Diversity Index increases with diversity.

Transects at sample sites had few similar tree species. Half the transects had similarity index values below 0.5. Simpson's Index of Similarity approaches 1.0 as similarity increases. Simpson's Similarity Indices for the 8 transects are presented in Table 11. Variability within and between sites is due largely to the small number of transects.

TABLE 10. Comparisons of diversity among sites using data collected from vegetation transects.

Site	Transect	Shannon Diversity Index*
Range 24 A	1	2.366
Range 24 A	2	2.250
Range 56	1	1.309
Range 56	2	2.322
Battle Drill Area	1	2.493
Battle Drill Area	2	1.122
Chocolocco Creek	1	1.848
Chocolocco Creek	2	1.999

*Diversity values closer to 1 indicate a less diverse or a more equitable community.

TABLE 11. Simpson's Similarity Indices* calculated for vegetation transect data collected at each site.

Transect Location and Number	Chocolocco Creek - 1	Chocolocco Creek - 2
Range 24 A - 1	0.0952	0.0455
Range 24 A - 2	0.0952	0.0455
Range 56 - 1	0.1765	0.3333
Range 56 - 2	0.1579	0.2222
Battle Drill Area - 1	0.2778	0.2778
Battle Drill Area - 2	0.2353	0.1765
Chocolocco Creek - 1	---	0.2778

* Similarity between samples increases as the index value approaches 1.0.

5.5 INSECTS

Analytical results and analysis of insects collected from all four sites are presented in Appendix D. There were no statistically significant differences for any compounds detected in insect tissue between exposure sites and the reference site (Table 13). Concentrations of fog oil hydrocarbons detected in insect samples were very low and not of concern.

We compared the number of insect Orders at exposure sites and the reference site. Community composition was similar among all sites (Table 12). The same taxa (orders) were present at each site (Appendix D). Simpson's Similarity Indices were greater than 0.7 when comparing community composition of reference and exposure sites (Table 12). There were more insects collected at the reference site. Site 3 had the fewest number of individuals and the fewest orders. Evenness was similar among all sites.

A major difference noted between insects at exposure sites and insects at the reference site was the number of Coleoptera. The reference site had 5 times more Coleoptera than any exposure site. There are several reasons this could occur. Habitat suitability for coleopterans may have been higher at the reference site. The reference site had more surface water habitat preferred by aquatic coleopterans than exposure sites. It is doubtful fog oil is the determining factor because other characteristics of insect populations were similar (i.e. number of orders, Simpson's Similarity Index, and evenness).

TABLE 12. Results of insects analysis performed to determine similarity of insect orders and communities collected at 4 sites.

	Site 1	Site 2	Site 3	Site 4- reference
Total Individuals	285	287	179	948
Number of Orders	11	9	8	11
Diversity	6.3484	6.3435	5.8417	7.4521
Evenness	2.6475	2.8871	2.8093	3.1078
JSC Similarity with Site 4	0.8333	0.8182	0.7273	
Index of Similarity	0.9091	0.9000	0.8421	

5.6 ANIMAL TISSUE

The analysis of bat tissue revealed significantly higher concentrations of many chemicals at exposure sites (Table 13). Hexadecane was present in greater amounts at Site 3 than the control site ($p < 0.10$). Biphenyl, Hexachloroethane, 2,6-Dimethylnaphthalene, 1,3-Dimethylnaphthalene, 1,2-Dimethylnaphthalene, and 2,3,5-Trimethylnaphthalene were present in significantly greater amounts at Site 2 ($p < 0.10$) and Site 3 ($p < 0.01$) than the control site. While this appears to be indicative of fog oil concentrating in bat tissue, the concentrations detected were very low (Appendix A). These levels were close to the detection limit and may be biochemical in origin. Different hydrocarbons may peak on chromatograms at the same retention time as the compounds being analyzed. Biological samples are high in hydrocarbon content and with such low concentrations, it is assumed these are not from fog oil but a natural component of tissue. We do not expect any of the fog oil hydrocarbons will accumulate in bat tissue.

No statistically significant differences were determined for bat guano, insect tissue, and fish tissue samples from exposure sites vs. the reference site (Table 13). Many statistical tests could not be completed because samples existed for only one site or hydrocarbon concentrations were below detection limit. The tests that could be completed showed no significant differences between the exposure sites and the reference site.

5.7 FOG OIL SMOKE SAMPLES

We detected little difference in volatile and semi-volatile organic compounds between 9 smoke samples and background air samples. We analyzed all fog oil smoke samples for any detectable organic compounds. Analyses show concentrations of parent fog oil (fog oil put into the generator to generate smoke) in the smoke samples to be $>99.2\%$. No aromatic, volatile, or semi-volatile organic compounds were detected at concentrations $>0.8\%$ in the smoke samples.

TABLE 13. Results of fog oil component analysis for bat, fish, insect tissue and guano samples from all sites.

ANIMAL TISSUE & GUANO	Bat tissue, Site 1 v. Site 4 (t-test)	Bat tissue, Site 2 v. Site 4 (t-test)	Bat tissue, Site 3 v. Site 4 (t-test)	Bat tissue, All Sites (ANOVA)	Bat guano, Site 1 v. Site 4 (t-test)	Insects, Site 1 v. Site 4 (t-test)	Insects, Site 2 v. Site 4 (t-test)	Insects, Site 3 v. Site 4 (t-test)	Insects, All Sites (ANOVA)	Fish, Site 1 v. Site 4 (t-test)	Fish, Site 2 v. Site 4 (t-test)	Fish, Site 3 v. Site 4 (t-test)	Fish, All Sites (ANOVA)
Chemical													
Biphenyl	=	2>4*	3>4***	3>2>1>4*	NA	=	=	=	=	NA	NA	NA	NA
2,6-Dimethylnaphthalene	=	2>4*	3>4***	3>2>1>4*	NA	=	=	=	=	NA	NA	NA	NA
1,3-Dimethylnaphthalene	=	2>4*	3>4***	3>2>1>4*	NA	=	=	=	=	NA	NA	NA	NA
1,2-Dimethylnaphthalene	=	2>4*	3>4***	3>2>1>4*	NA	=	=	=	=	NA	NA	NA	NA
2,3,5-Trimethylnaphthalene	=	2>4*	3>4***	3>2>1>4*	NA	=	=	=	=	NA	NA	NA	NA
Hexadecane	=	=	3>4*	=	NA	=	=	=	=	NA	NA	NA	=
Fluorene	=	=	=	=	NA	=	=	=	=	NA	NA	NA	=
4,4'-Dimethylbiphenyl	=	2>4*	3>4***	3>2>1>4*	NA	=	=	=	=	NA	NA	NA	=
1-Methylfluorene	=	=	=	=	NA	=	=	=	=	NA	NA	NA	=
Phenanthrene	=	=	=	=	NA	=	=	=	=	NA	NA	NA	=
Anthracene	=	=	=	=	NA	=	=	=	=	NA	NA	NA	=
2-Methylphenanthrene	=	=	=	=	NA	=	=	=	=	NA	NA	NA	=
9-Methylanthracene	=	=	=	=	NA	=	=	=	=	NA	NA	NA	=
3,6-Dimethylphenanthrene	=	=	=	=	NA	=	=	=	=	NA	NA	NA	=
2-Ethylanthracene	=	=	=	=	NA	=	=	=	=	NA	NA	NA	=
9,10-Dimethylanthracene	=	=	=	=	NA	=	=	=	=	NA	NA	NA	=
Hexachloroethane	=	2>4*	3>4***	3>2>1>4*	NA	=	=	=	=	NA	NA	NA	NA

Site numbers refer to sites (1=Range 24A, 2=Range 56, 3=Battle Drill Area, and 4=Choccolocco Creek)

NA - There were either no observations or no variance in the observations (all chemical concentrations were below detection limit)

= - There is no statistical difference between the sites;

*** - Statistically significant difference ($p < 0.01$);

** - Statistically significant difference ($p < 0.05$);

* - Statistically significant difference ($p < 0.10$);

> - Indicates which site had the greater value.

Fog oil smoke samples demonstrate a shift in the molecular weight of the unspciated hydrocarbons when compared to parent fog oil samples. After fog oil has been heated in the generator, heavier hydrocarbons (i.e. C_{10} - C_{50}) increase in number while lighter hydrocarbons (i.e. $< C_{10}$) decrease. The most likely explanation for this shift in molecular weight of hydrocarbons present is volatilization. Lighter hydrocarbons volatilize to form CO_2 , H_2 , CO , and other atmospheric gases not measured in the smoke samples.

A summary of chromatograms, test methods, and standards for fog oil smoke samples used in the analysis are presented in Appendix F.

Section 6.0

Conclusion

1. There was little evidence that fog oil components persist in soil, sediment or surface water. Either little or no difference was observed between exposure sites and the reference site, or the reference site had higher concentrations of hydrocarbons than exposure sites.
2. The reference site was suitable for analyses based on similarity of insects, soil types, and lack of fog oil training.
3. We found no evidence of large concentrations of hydrocarbons in tissue samples. If bioaccumulation was occurring at exposure sites, organisms analyzed should have exhibited hydrocarbons in their tissue. Results of this study indicate no bioaccumulation of fog oil is occurring at Fort McClellan.
4. Fog oil smoke samples showed little change in chemical composition compared to parent fog oil. We were unable to detect any volatile or semi-volatile organics in our smoke samples. If volatilization or thermal decomposition occurs, they either result in low concentrations of decomposition or volatilization products, or only form atmospheric gases.

5. Hydrocarbons specific to fog oil were not found in significant quantities in any samples. We analyzed samples for hydrocarbons known to have a long environmental residence time. Based on our analysis, fog oil will not bioconcentrate, bioaccumulate, or biomagnify in the environment or biota at Fort Leonard Wood.

Section 7.0

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Appendix A

Laboratory Data, Forms, and Analyses

FORT McCLELLAN SAMPLING PROCEDURES

- Every ten samples of media (soil, sediment, water), a replicate will be taken and labeled "dup" (ie. SW4-dup-#). Sample location will be the same as 10th sample.
- Be sure to keep accurate records in field notebooks
- Wear gloves at all times to avoid contamination
- Do not wear aftershave or lotion

SAMPLE IDENTIFICATION AT EACH SITE

SITE 1 - RANGE 24A - (exposure)

Tissues

mammals	TM1 - (capture #)
bat guano	TM1 - G (capture#)
insects (black light)	TI1 - B - (sample #)
insect (white light)	TI1 - W -(sample#)
fish	TF1 - (number)
vegetation	TV1 - (sample location)

Surface Water SW1 - (sample location)

Sediment SD1 - (sample location)

<u>Soil</u>	surface (0-3")	SU1 - (sample location)
	middle (3-12")	SM1 - (sample location)
	bottom (12"-3')	SB1 - (sample location)

SITE 2 - RANGE 56 - (exposure)

Tissues

mammals	TM2 - (capture #)
guano	TM2 - G - (capture#)
insects (black light)	TI2 - B - (sample #)
insect (white light)	TI2 - W -(sample#)
fish	TF2 - (number)
vegetation	TV2 - (sample location)

Surface Water SW2 - (sample location)

Sediment SD2 - (sample location)

<u>Soil</u>	surface (0-3")	SU2 - (sample location)
	middle (3-12")	SM2 - (sample location)
	bottom (12"-3')	SB2 - (sample location)

SITE 3 - BATTLE DRILL AREA - (exposure)

Tissues

mammals	TM3 - (capture #)
bat guano	TM3 - G (capture#)
insects (black light)	TI3 - B - (sample #)
insect (white light)	TI3 - W -(sample#)
fish	TF3 - (number)
vegetation	TV3 - (sample location)

<u>Surface Water</u>	SW3 - (sample location)
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<u>Sediment</u>	SD3 - (sample location)
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<u>Soil</u>	surface (0-3")	SU3 - (sample location)
	middle (3-12")	SM3 - (sample location)
	bottom (12"-3')	SB3 - (sample location)

SITE 4 - RANGE 13 (control/reference site)

Tissues

mammals	TM4 - (capture #)
guano	TM4 - G - (capture#)
insects (black light)	TI4 - B - (sample #)
insect (white light)	TI4 - W -(sample#)
fish	TF4 - (number)
vegetation	TV4 - (sample location)

<u>Surface Water</u>	SW4 - (sample location)
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<u>Sediment</u>	SD4 - (sample location)
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<u>Soil</u>	surface (0-3")	SU4 - (sample location)
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middle (3-12")
bottom (12"-3')

SM4 - (sample location)
SB4 - (sample location)

Site 1-soil

[illegible]

Site 1-soil

Sample Name	Anthracene	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachlorocyclohexane
Range 24a							
42818-044 SUI-1-816	<0.05	<0.05	<0.05	<0.05	0.0535	<0.05	<0.05
42818-022 SMI-1-816	0.0519	<0.05	<0.05	<0.05	0.0533	<0.05	<0.05
42818-045 SUI-2-816	<0.05	<0.05	<0.05	<0.05	0.185	<0.05	<0.05
42818-046 SUI-2d-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-023 SMI-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-003 SBI-2-816	<0.05	<0.05	<0.05	<0.05	0.0816	<0.05	<0.05
42818-047 SUI-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.154
42818-024 SMI-3-816	<0.05	0.0775	<0.05	<0.05	0.126	<0.05	<0.05
42818-004 SBI-3-816	<0.05	<0.05	<0.05	<0.05	0.0721	<0.05	<0.05
42818-048 SUI-4-816	<0.05	<0.05	<0.05	<0.05	0.0978	<0.05	0.285
42818-026 SMI-4-816	0.127	0.0973	0.0515	<0.05	0.0840	<0.05	0.940
42818-005 SBI-4-816	<0.05	<0.05	<0.05	<0.05	0.0614	<0.05	<0.05
42818-050 SUI-5-816	<0.05	<0.05	<0.05	<0.05	0.0513	<0.05	<0.05
42818-027 SMI-5-816	<0.05	<0.05	<0.05	<0.05	0.0626	<0.05	0.0951
42818-028 SMI-5d-816	<0.05	<0.05	<0.05	<0.05	0.0538	<0.05	0.259
42818-006 SBI-5-816	<0.05	<0.05	<0.05	<0.05	0.0666	<0.05	<0.05
42818-051 SUI-6-816	<0.05	<0.05	<0.05	<0.05	0.0514	<0.05	0.143
42818-029 SMI-6-816	<0.05	<0.05	<0.05	<0.05	0.0604	<0.05	0.410
42818-007 SBI-6-816	<0.05	<0.05	<0.05	<0.05	0.0533	<0.05	<0.05

Site 1-water

Sample Name	Biphenyl	2,6-Dimethylnaphthalene	1,3-Dimethylnaphthalene	1,2-Dimethylnaphthalene	2,3,5-Trimethylnaphthalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene
Range 24a											
42818-201 SW1-1-816	<1.0	<1.0	<1.0	<1.0	1.10	<1.0	1.92	<1.0	<1.0	<1.0	1.03
42818-202 SW1-2-816	<1.0	<1.0	<1.0	<1.0	1.13	<1.0	1.92	<1.0	<1.0	<1.0	<1.0
42818-203 SW1-3-816	<1.0	<1.0	<1.0	<1.0	1.21	<1.0	4.05	<1.0	<1.0	<1.0	1.29
Sample Name											
Range 24a											
42818-201 SW1-1-816	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0					
42818-202 SW1-2-816	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0					
42818-203 SW1-3-816	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0					

Site 1-sedmnt

Sample Name	Biphenyl	2,6-Dimethylnaphthalene	1,3-Dimethylnaphthalene	1,2-Dimethylnaphthalene	2,3,5-Trimethylnaphthalene	Hexadecane	Fluorene	4,4'-Dimethyldiphenyl	1-Methylfluorene	Phenanthrene	Anthracene
Range 24a											
42818-100 SD1-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-101 SD1-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-102 SD1-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-103 SD3-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sample Name	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane					
Range 24a											
42818-100 SD1-1-816	<0.05	<0.05	<0.05	0.133	<0.05	0.0562					
42818-101 SD1-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.133					
42818-102 SD1-3-816	0.147	<0.05	0.198	0.422	<0.05	<0.05					
42818-103 SD3-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.0845					

Site 1- veg

Sample Name	Biphenyl	2,6-Dimethylnaphthalene	3,6-Dimethylphenanthrene	2-Ethylantracene	9,10-Dimethylantracene	Hexachloroethane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene
Range 24a											
42818-264 SV1-2-816	0.898	<0.05	0.250	<0.05	0.0645	0.0786	0.101	0.0647	0.122	0.120	0.114
42818-265 SV1-3-816	0.253	<0.05	0.800	0.268	1.137	0.240	0.0920	<0.05	0.111	0.159	0.0949
42818-266 SV1-1-816	0.0673	0.234	0.675	2.856	1.548	0.870	0.492	0.347	0.158	0.314	0.160
Sample Name	2-Methylphenanthrene	9-Methylantracene	3,6-Dimethylphenanthrene	2-Ethylantracene	9,10-Dimethylantracene	Hexachloroethane					
Range 24a											
42818-264 SV1-2-816	0.299	0.289	0.243	0.358	0.516	<0.05					
42818-265 SV1-3-816	0.245	0.244	0.160	2.779	0.190	<0.05					
42818-266 SV1-1-816	0.309	0.327	0.278	0.377	0.369	<0.05					

Site 1-animal

Sample Name	Biphenyl	2,6-Dimethylnaphthalene	1,3-Dimethylnaphthalene	1,2-Dimethylnaphthalene	2,3,5-Trimethylnaphthalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene
Range 24a											
Insects											
42818-251 T11-808	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
42818-253 T11-809	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.0429	<0.03
Bats											
42818-291 TM1-1-808	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	0.236	<0.09	0.290	0.172	0.0988
42818-292 TM1-2-809	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.0659	<0.04	0.0454	0.0911	0.0430
Sample Name											
Range 24a											
Insects											
42818-251 T11-808	<0.50	<0.50	<0.50	1.318	<0.50	<0.50					
42818-253 T11-809	<0.03	<0.03	0.0393	0.0868	<0.03	<0.03					
Bats											
42818-291 TM1-1-808	0.221	0.323	0.169	0.525	<0.09	<0.09					
42818-292 TM1-2-809	0.0843	0.0689	0.149	0.284	<0.04	<0.04					

Site 2-soil

[illegible]

Site 2-soil

Sample Name	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane
Range S6						
42818-032 SU2-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-030 SM2-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.446
42818-008 SB2-1-816	<0.05	<0.05	<0.05	0.0558	<0.05	<0.05
42818-033 SU2-2-816	<0.05	<0.05	<0.05	0.134	<0.05	<0.05
42818-031 SM2-2-816	0.0655	<0.05	<0.05	0.0614	<0.05	0.370
42818-009 SB2-2-816	<0.05	<0.05	<0.05	0.0552	<0.05	<0.05
42818-033 SU2-3-816	<0.05	<0.05	<0.05	0.0515	<0.05	0.184
42818-032 SM2-3-816	<0.05	<0.05	<0.05	0.0542	<0.05	0.286
42818-010 SB2-3-816	<0.05	<0.05	<0.05	0.0544	<0.05	<0.05
42818-035 SU2-4-816	<0.05	<0.05	<0.05	0.0559	<0.05	<0.05
42818-036 SU2-4d-816	<0.05	<0.05	<0.05	0.0537	<0.05	0.0966
42818-033 SM2-4-816	0.0870	<0.05	<0.05	<0.05	<0.05	0.772
42818-011 SB2-4-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-037 SU2-5-816	<0.05	<0.05	<0.05	0.0542	<0.05	0.170
42818-034 SM2-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.0713
42818-012 SB2-5-816	<0.05	<0.05	<0.05	0.0650	<0.05	<0.05
42818-038 SU2-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.0926
42818-035 SM2-6-816	0.0620	<0.05	<0.05	0.0707	<0.05	1.798
42818-014 SB2-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Site 2-water

Sample Name	Biphenyl	2,6-Dimethylnaphalene	1,3-Dimethylnaphalene	1,2-Dimethylnaphalene	2,3,5-Trimethylnaphalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene
Range 56											
42818-204 SW2-1-815	<1.0	<1.0	<1.0	<1.0	0	<1.0	0	<1.0	<1.0	<1.0	<1.0
42818-205 SW2-1d-815	<1.0	<1.0	<1.0	<1.0	0	<1.0	0	<1.0	<1.0	<1.0	<1.0
42818-206 SW2-2-815	<1.0	<1.0	<1.0	<1.0	0	<1.0	0	<1.0	<1.0	<1.0	<1.0
42818-207 SW2-3-815	<1.0	<1.0	<1.0	<1.0	0	<1.0	0.00	<1.0	0.00	0	0
42818-208 SW2-4-815	<1.0	<1.0	<1.0	<1.0	0	<1.0	0	<1.0	<1.0	<1.0	<1.0
42818-209 SW2-5-815	<1.0	<1.0	<1.0	<1.0	0	<1.0	0	<1.0	<1.0	<1.0	<1.0
42818-210 SW2-6-815	<1.0	<1.0	<1.0	<1.0	0	<1.0	0	<1.0	<1.0	<1.0	<1.0
42818-212 SW2-7-815	<1.0	<1.0	<1.0	<1.0	0.00	<1.0	0	<1.0	0	0	0
42818-213 SW2-8-815	<1.0	<1.0	<1.0	<1.0	0	<1.0	0	<1.0	<1.0	<1.0	<1.0
42818-214 SW2-9-815	<1.0	<1.0	<1.0	<1.0	0.00	<1.0	0	<1.0	<1.0	<1.0	0

Site 2-water

Sample Name	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachlorocyclohexane
Range 56						
42818-204 SW2-1-815	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-205 SW2-1d-815	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-206 SW2-2-815	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-207 SW2-3-815	<1.0	0	<1.0	<1.0	<1.0	<1.0
42818-208 SW2-4-815	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-209 SW2-5-815	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-210 SW2-6-815	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-212 SW2-7-815	<1.0	0	<1.0	<1.0	<1.0	<1.0
42818-213 SW2-8-815	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-214 SW2-9-815	<1.0	0	<1.0	<1.0	<1.0	<1.0

Site 2-sedmnt

[illegible]

Site 2-sedmnt

Sample Name	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane
Range 56						
42818-088 SD2-1-815	<0.05	<0.05	<0.05	0.109	<0.05	0.0603
42818-089 SD2-1d-815	<0.05	<0.05	<0.05	0.118	<0.05	0.183
42818-090 SD2-2-815	<0.05	<0.05	<0.05	0.0680	<0.05	<0.05
42818-091 SD2-3-815	<0.05	<0.05	<0.05	0.0972	<0.05	0.190
42818-092 SD2-4-815	<0.05	<0.05	<0.05	0.184	<0.05	0.490
42818-093 SD2-5-815	<0.05	<0.05	<0.05	0.231	<0.05	<0.05
42818-094 SD2-6-815	<0.05	<0.05	<0.05	0.143	<0.05	0.455
42818-095 SD2-7-815	<0.05	<0.05	<0.05	0.112	<0.05	0.200
42818-096 SD2-8-815	<0.05	<0.05	<0.05	0.147	<0.05	0.259
42818-097 SD2-9-815	<0.05	<0.05	<0.05	0.137	<0.05	<0.05

Site 2-veg

Sample Name	Biphenyl	2,6-Dimethylnaphthalene	1,3-Dimethylnaphthalene	2-Ethylantracene	9,10-Dimethylantracene	Hexachloroethane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene
Range 56											
42818-267 TV2-1-815	<0.05	0.0654	8.408	<0.05	0.0833	0.169	0.0985	0.0983	0.109	0.142	<0.05
42818-268 TV2-2-815	0.0833	0.0817	0.326	<0.05	0.292	0.304	0.280	0.212	0.579	0.910	0.243
42818-269 TV2-3-815	<0.04	<0.04	0.0655	<0.04	<0.04	<0.04	0.148	0.0530	0.0915	0.101	0.0434
Sample Name	2-Methylphenanthrene	9-Methylantracene	3,6-Dimethylphenanthrene	2-Ethylantracene	9,10-Dimethylantracene	Hexachloroethane					
Range 56											
42818-267 TV2-1-815	0.207	0.154	0.189	0.359	0.149	<0.05					
42818-268 TV2-2-815	2.174	<0.05	0.300	4.493	0.122	<0.05					
42818-269 TV2-3-815	0.138	0.171	0.0984	0.175	0.0833	<0.04					

Site 2-animal

Sample Name	Biphenyl	2,6-Dimethylnaphthalene	1,3-Dimethylnaphthalene	1,2-Dimethylnaphthalene	2,3,5-Trimethylnaphthalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene
Range 56											
Insects											
42818-259 TI2-812	<0.05	<0.05	0.0557	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-260 TI2-813	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0566	<0.05	<0.05	0.0648	0.0695
Bats											
42818-299 TM2-1-812	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.0864	<0.04	0.0665	0.1117	0.0592
42818-300 TM2-11-812	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0653	<0.05
42818-301 TM2-2-812	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.115	<0.10	<0.10	0.131	<0.10
42818-303 TM2-3-812	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.131	<0.10	0.248	0.471	0.127
42818-304 TM2-4-812	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.169	<0.10	0.241	0.439	0.136
42818-305 TM2-5-812	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	0.0850	<0.07	<0.07	0.0931	0.0742
42818-307 TM2-1-813	<0.10	<0.10	<0.10	<0.10	<0.10	0.116	0.263	0.162	0.317	0.519	0.159
42818-312 TM2-Q-812	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0
42818-313 TM2-Q-813	<17.0	<17.0	<17.0	<17.0	<17.0	<17.0	18.893	<17.0	17.309	<17.0	<17.0
42818-314 TM2-6-812	<0.05	<0.05	<0.05	<0.05	<0.05	0.0509	0.112	<0.05	0.122	0.203	0.0707
Fish											
42818-278 TF2-1a-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.317	<0.05	0.0644	0.129	0.0651
42818-279 TF2-1b-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0770	<0.05	0.0580	0.119	0.0568
42818-280 TF2-2-815	<0.05	<0.05	<0.05	<0.05	<0.05	0.0695	0.340	0.0987	0.261	0.433	0.1215
42818-281 TF2-3-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.283	<0.05	0.101	0.169	0.0853
42818-282 TF2-4-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.234	<0.05	<0.05	0.0885	<0.05
42818-283 TF2-5-815	<0.05	<0.05	<0.05	<0.05	<0.05	0.0621	0.333	0.0803	0.202	0.344	0.0952
42818-284 TF2-6-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.210	<0.05	<0.05	0.0775	<0.05

Sample Name	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane
Range 56						
Insects						
42818-259 TF2-812	<0.05	<0.05	<0.05	0.115	<0.05	<0.05
42818-260 TF2-813	0.0510	<0.05	0.0908	0.128	<0.05	<0.05
Bats						
42818-299 TM2-1-812	0.135	0.121	0.124	0.285	<0.04	<0.04
42818-300 TM2-11-812	0.105	0.142	0.163	0.318	<0.05	<0.05
42818-301 TM2-2-812	0.189	0.122	0.249	0.489	0.252	<0.10
42818-303 TM2-3-812	0.275	0.764	0.239	1.150	<0.10	<0.10
42818-304 TM2-4-812	0.334	0.607	0.211	1.368	<0.10	<0.10
42818-305 TM2-5-812	0.148	0.270	0.135	0.294	<0.07	<0.07
42818-307 TM2-1-813	0.370	0.862	0.225	1.363	<0.10	<0.10
42818-312 TM2-G-812	<6.0	<6.0	6.444	12.616	<6.0	<6.0
42818-313 TM2-G-813	<17.0	21.983	<17.0	61.308	<17.0	<17.0
42818-314 TM2-6-812	0.168	0.340	0.116	0.627	<0.05	<0.05
Fish						
42818-278 TF2-1a-815	0.126	0.125	0.119	0.259	<0.05	<0.05
42818-279 TF2-1b-815	0.108	0.0554	0.139	0.295	0.142	<0.05
42818-280 TF2-2-815	0.275	0.403	0.190	0.981	<0.05	<0.05
42818-281 TF2-3-815	0.283	0.122	0.252	0.450	0.251	<0.05
42818-282 TF2-4-815	0.0731	0.0619	0.0534	0.199	<0.05	<0.05
42818-283 TF2-5-815	0.233	0.338	0.131	0.761	0.0720	<0.05
42818-284 TF2-6-815	0.0891	0.0565	0.0736	0.167	<0.05	<0.05

Site 3-soil

Sample Name	Biphenyl	2,6-Dimethylnaphthalene	1,3-Dimethylnaphthalene	1,2-Dimethylnaphthalene	2,3,5-Trimethylnaphthalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene
Battle Drill											
42818-059 SU3-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-036 SM3-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-038 SM3-1d-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-015 SB3-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-060 SU3-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-039 SM3-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-016 SB3-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-062 SU3-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-040 SM3-3-816	<0.05	<0.05	0.0670	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-017 SB3-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-063 SU3-4-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-041 SM3-4-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-018 SB3-4-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-019 SB3-4d-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0678	<0.05	0.0641
42818-064 SU3-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-042 SM3-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-020 SB3-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-065 SU3-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-043 SM3-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-021 SB3-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0735	<0.05	<0.05

Site 3-soil

Sample Name	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane
Battle Drill						
42818-059 SU3-1-816	<0.05	<0.05	<0.05	0.0736	<0.05	<0.05
42818-036 SM3-1-816	<0.05	<0.05	<0.05	0.0443	<0.05	0.398
42818-038 SM3-1d-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-015 SB3-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-060 SU3-2-816	<0.05	<0.05	<0.05	0.0843	<0.05	0.197
42818-039 SM3-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-016 SB3-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-062 SU3-3-816	<0.05	<0.05	<0.05	0.0656	<0.05	0.0954
42818-040 SM3-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-017 SB3-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-063 SU3-4-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-041 SM3-4-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-018 SB3-4-816	<0.05	<0.05	<0.05	0.0521	<0.05	<0.05
42818-019 SB3-4d-816	<0.05	<0.05	<0.05	0.0500	<0.05	<0.05
42818-064 SU3-5-816	<0.05	<0.05	<0.05	0.0649	<0.05	<0.05
42818-042 SM3-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-020 SB3-5-816	<0.05	<0.05	<0.05	0.0510	<0.05	<0.05
42818-065 SU3-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.460
42818-043 SM3-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-021 SB3-6-816	<0.05	<0.05	<0.05	0.0505	<0.05	<0.05

Site 3-water

Sample Name	Biphenyl	2,6-Dimethylnaphthalene	1,3-Dimethylnaphthalene	1,2-Dimethylnaphthalene	2,3,5-Trimethylnaphthalene	Hexadecane	Fluorene	4,4'-Dimethyldiphenyl	1-Methylfluorene	Phenanthrene	Anthracene
Battle Drill											
42818-215 SW3-1-816	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.14	<1.0	<1.0	<1.0	<1.0
42818-216 SW3-2-816	<1.0	<1.0	<1.0	<1.0	1.31	<1.0	4.08	<1.0	<1.0	<1.0	<1.0
42818-217 SW3-3-816	<1.0	<1.0	<1.0	<1.0	2.26	<1.0	9.43	<1.0	1.25	1.23	2.75
42818-218 SW3-6-816	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.66	<1.0	<1.0	<1.0	<1.0
42818-219 SW3-8-816	<1.0	<1.0	<1.0	<1.0	1.32	<1.0	3.70	<1.0	<1.0	<1.0	<1.0
Battle Drill											
42818-215 SW3-1-816	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0					
42818-216 SW3-2-816	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0					
42818-217 SW3-3-816	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0					
42818-218 SW3-6-816	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0					
42818-219 SW3-8-816	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0					

Site 3-sedmnt

Sample Name	Biphenyl	2,6-Dimethylnaphthalene	1,3-Dimethylnaphthalene	1,2-Dimethylnaphthalene	2,3,5-Trimethylnaphthalene	Hexadecane	Fluorene	4,4'-Dimethyldiphenyl	1-Methylfluorene	Phenanthrene	Anthracene
Battle Drill											
42818-103 SD3-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-104 SD3-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.237	<0.05	<0.05	<0.05	0.0605	<0.05
42818-105 SD3-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0637	<0.05
42818-106 SD3-4-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0847	<0.05
42818-107 SD3-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-108 SD3-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-109 SD3-7-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-110 SD3-8-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.536	<0.05	<0.05	<0.05	<0.05	<0.05

Site 3-sedmnt

Sample Name	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachlorocyclopentadiene
Battle Drill						
42818-103 SD3-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.0845
42818-104 SD3-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-105 SD3-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-106 SD3-4-816	0.0784	<0.05	<0.05	0.163	<0.05	<0.05
42818-107 SD3-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.0985
42818-108 SD3-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.112
42818-109 SD3-7-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.247
42818-110 SD3-8-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.137

Site 3-veg

Sample Name	Biphenyl	2,6-Dimethylnaphthalene	1,3-Dimethylnaphthalene	2-Ethylantracene	9,10-Dimethylantracene	Hexachlorocyclopentadiene	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene
Battle Drill											
42818-270 TV3-1-815	<0.05	<0.05	0.206	<0.05	<0.05	0.0643	0.117	<0.05	0.0900	<0.05	0.0662
42818-271 TV3-2-815	<0.05	<0.05	0.0919	0.0614	0.0667	0.0526	0.179	0.153	0.309	0.513	0.157
42818-272 TV3-3-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.113	<0.05	0.0870	0.101	0.0607
Battle Drill											
42818-270 TV3-1-815	0.186	0.233	0.141	0.233	0.103	<0.05					
42818-271 TV3-2-815	0.383	0.696	0.176	0.888	0.173	<0.05					
42818-272 TV3-3-815	0.168	0.226	0.123	0.202	0.0530	<0.05					

Site 3-animal

Sample Name	Biphenyl	2,6-Dimethylnaphthalene	1,3-Dimethylnaphthalene	1,2-Dimethylnaphthalene	2,3,5-Trimethylnaphthalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene	Anthracene
Battle Drill											
Insects											
42818-255 TI3-810	<0.04	<0.04	0.040	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
42818-257 TI3-811	<0.06	0.0659	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.0601
Bats											
42818-297 TM3-6-811	<0.08	<0.08	<0.08	<0.08	<0.08	0.0983	0.152	0.113	0.267	0.480	0.141
42818-293 TM3-1-809	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.105	<0.10	<0.10	0.156	<0.10
42818-294 TM3-2-810	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.132	<0.10	<0.10	0.156	<0.10
Fish											
42818-285 TF3-1-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.172	<0.05	<0.05	0.0539	0.0569
42818-286 TF3-2-815	<0.05	<0.05	<0.05	<0.05	0.0635	0.0761	0.348	0.0898	0.193	0.316	0.100
42818-287 TF3-3-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.113	<0.05	<0.05	<0.05	<0.05
42818-288 TF3-4-815	<0.05	<0.05	<0.05	<0.05	<0.05	0.0710	0.361	0.0949	0.196	0.321	0.0737
42818-289 TF3-5-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.229	<0.05	<0.05	<0.05	<0.05

Sample Name	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachlorocyclopentadiene
Battle Drill						
Insects						
42818-255 TI3-810	0.0679	<0.04	<0.04	0.110	<0.04	<0.04
42818-257 TI3-811	<0.06	<0.06	<0.06	0.150	<0.06	<0.06
Bats						
42818-297 TM3-6-811	0.283	0.732	0.209	0.818	0.0844	<0.08
42818-293 TM3-1-809	0.247	0.238	0.326	0.551	<0.10	<0.10
42818-294 TM3-2-810	0.207	0.225	0.184	0.514	<0.10	<0.10
Fish						
42818-285 TF3-1-815	0.0578	<0.05	<0.05	0.119	<0.05	<0.05
42818-286 TF3-2-815	0.181	0.313	0.119	0.669	<0.05	<0.05
42818-287 TF3-3-815	0.0664	0.0612	0.0607	0.141	<0.05	<0.05
42818-288 TF3-4-815	0.213	0.301	0.132	0.682	0.0513	<0.05
42818-289 TF3-5-815	0.0559	0.0659	<0.05	0.185	<0.05	<0.05

Site 4-soil

Sample Name	Biphenyl	2,6-Dimethylnaphthalene	1,3-Dimethylnaphthalene	1,2-Dimethylnaphthalene	2,3,5-Trimethylnaphthalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene
Reference - Choccolocco										
42818-080 SU4-1-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0660	<0.05
42818-074 SM4-1-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-066 SB4-1-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0526
42818-081 SU4-2-817	<0.05	<0.05	<0.05	<0.05	<0.05	0.315	<0.05	<0.05	0.0756	<0.05
42818-075 SM4-2-817	<0.05	<0.05	0.166	<0.05	<0.05	0.0853	<0.05	<0.05	0.0517	<0.05
42818-067 SB4-2-817	<0.05	<0.05	0.0641	<0.05	<0.05	<0.05	<0.05	<0.05	0.0522	<0.05
42818-068 SB4-2d-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-082 SU4-3-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-076 SM4-3-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0575	<0.05
42818-069 SB4-3-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0517	<0.05
42818-083 SU4-4-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-077 SM4-4-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-070 SB4-4-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0704	<0.05
42818-084 SU4-5-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-078 SM4-5-817	<0.05	<0.05	<0.05	<0.05	<0.05	0.479	<0.05	<0.05	<0.05	<0.05
42818-071 SB4-5-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0827	<0.05
42818-086 SU4-6-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-087 SU4-6d-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0529	0.0526
42818-079 SM4-6-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-072 SB4-6-817	<0.05	<0.05	<0.05	<0.05	<0.05	0.225	<0.05	<0.05	0.0912	0.104
	<0.05	<0.05	<0.05	<0.05	<0.05	1.307	<0.05	<0.05	<0.05	<0.05

Site 4-soil

Sample Name	Anthracene	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane
Reference - Choccolocco							
42818-080 SU4-1-817	<0.05	<0.05	<0.05	<0.05	0.227	0.105	0.228
42818-074 SM4-1-817	<0.05	<0.05	<0.05	<0.05	0.0546	<0.05	0.0787
42818-066 SB4-1-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-081 SU4-2-817	<0.05	<0.05	0.0514	<0.05	0.440	0.0764	0.238
42818-075 SM4-2-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.187
42818-067 SB4-2-817	<0.05	<0.05	<0.05	<0.05	0.209	<0.05	0.101
42818-068 SB4-2d-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.296
42818-082 SU4-3-817	<0.05	<0.05	<0.05	<0.05	0.276	0.0542	0.132
42818-076 SM4-3-817	<0.05	<0.05	<0.05	<0.05	0.0560	<0.05	0.195
42818-069 SB4-3-817	<0.05	<0.05	<0.05	<0.05	0.217	<0.05	<0.05
42818-083 SU4-4-817	<0.05	<0.05	<0.05	<0.05	0.227	<0.05	0.209
42818-077 SM4-4-817	<0.05	<0.05	<0.05	<0.05	0.0750	<0.05	0.302
42818-070 SB4-4-817	<0.05	<0.05	<0.05	<0.05	0.145	<0.05	0.0693
42818-084 SU4-5-817	<0.05	<0.05	<0.05	0.0502	0.230	<0.05	0.123
42818-078 SM4-5-817	<0.05	0.0756	0.0530	<0.05	0.131	<0.05	0.430
42818-071 SB4-5-817	<0.05	<0.05	<0.05	<0.05	0.148	<0.05	<0.05
42818-086 SU4-6-817	<0.05	0.0647	<0.05	<0.05	<0.05	<0.05	0.199
42818-087 SU4-6d-817	<0.05	<0.05	<0.05	<0.05	0.0902	<0.05	0.0656
42818-079 SM4-6-817	<0.05	<0.05	<0.05	<0.05	0.221	<0.05	0.171
42818-072 SB4-6-817	<0.05	<0.05	<0.05	<0.05	0.138	<0.05	<0.05

Site 4-water

Sample Name	Biphenyl	2,6-Dimethylnaphthalene	1,3-Dimethylnaphthalene	1,2-Dimethylnaphthalene	2,3,5-Trimethylnaphthalene	Hexadecane	Fluorene	4,4'-Dimethyldiphenyl	1-Methylfluorene	Phenanthrene
Reference - Choccolocco										
42818-220 SW4-1-817	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0	<1.0	<1.0	<1.0
42818-221 SW4-2-817	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0	<1.0	<1.0	<1.0
42818-223 SW4-3-817	<1.0	<1.0	<1.0	<1.0	0	0	0	<1.0	0	0
42818-224 SW4-4-817	<1.0	<1.0	<1.0	<1.0	0	<1.0	0.00	<1.0	<1.0	<1.0
42818-225 SW4-5-817	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0	<1.0	<1.0	<1.0
42818-226 SW4-6-817	<1.0	<1.0	<1.0	<1.0	0	<1.0	0.00	<1.0	0	<1.0
42818-227 SW4-7-817	<1.0	<1.0	<1.0	<1.0	0	0	0	<1.0	<1.0	<1.0
42818-228 SW4-7d-817	<1.0	<1.0	<1.0	<1.0	0	0	0	<1.0	<1.0	<1.0
42818-229 SW4-8-817	<1.0	<1.0	<1.0	<1.0	0	0	0	<1.0	<1.0	<1.0
42818-230 SW4-9-817	<1.0	<1.0	<1.0	<1.0	0	<1.0	0	<1.0	<1.0	<1.0
42818-231 SW4-10-817	<1.0	<1.0	<1.0	<1.0	0	<1.0	0	<1.0	<1.0	<1.0

Site 4-water

Sample Name	Anthracene	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane
Reference - Choccolocco							
42818-220 SW4-1-817	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-221 SW4-2-817	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-223 SW4-3-817	0	<1.0	0	<1.0	0	<1.0	<1.0
42818-224 SW4-4-817	0	<1.0	0	<1.0	<1.0	<1.0	<1.0
42818-225 SW4-5-817	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-226 SW4-6-817	0	<1.0	0	<1.0	0	<1.0	<1.0
42818-227 SW4-7-817	0	<1.0	0	<1.0	0	<1.0	<1.0
42818-228 SW4-7d-817	0.00	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-229 SW4-8-817	0	<1.0	<1.0	<1.0	0.00	<1.0	<1.0
42818-230 SW4-9-817	0.00	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-231 SW4-10-817	0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

Site 4-sedmnt

Sample Name	Biphenyl	2,6-Dimethylnaphthalene	1,3-Dimethylnaphthalene	1,2-Dimethylnaphthalene	2,3,5-Trimethylnaphthalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene
Reference - Choccolocco										
42818-114 SD4-1-817	<0.05	<0.05	<0.05	<0.05	<0.05	0.345	<0.05	<0.05	<0.05	<0.05
42818-115 SD4-2-817	<0.05	<0.05	<0.05	<0.05	<0.05	0.454	<0.05	<0.05	<0.05	<0.05
42818-116 SD4-3-817	<0.05	<0.05	<0.05	<0.05	<0.05	0.366	<0.05	<0.05	<0.05	<0.05
42818-117 SD4-4-817	<0.05	<0.05	<0.05	<0.05	<0.05	0.426	<0.05	<0.05	<0.05	<0.05
42818-118 SD4-5-817	<0.05	<0.05	<0.05	<0.05	<0.05	0.247	<0.05	<0.05	<0.05	<0.05
42818-119 SD4-6-817	<0.05	<0.05	<0.05	<0.05	<0.05	0.255	<0.05	<0.05	<0.05	<0.05
42818-120 SD4-7-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-121 SD4-7d-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-122 SD4-8-817	<0.05	<0.05	<0.05	<0.05	<0.05	0.208	<0.05	<0.05	<0.05	<0.05
42818-123 SD4-9-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-124 SD4-10-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0781	<0.05

Site 4-sedmnt

[illegible]

Site 4-veg

Sample Name	Biphenyl	2,6-Dimethylnaphthalene	1,3-Dimethylnaphthalene	1,2-Dimethylnaphthalene	2,3,5-Trimethylnaphthalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene
Reference - Choccolocco										
42818-273 SV4-1-817	0.133	<0.05	0.149	<0.05	<0.05	0.0735	0.183	0.0734	0.102	0.0666
42818-274 SV4-2-817	<0.05	<0.05	0.0526	<0.05	<0.05	0.0683	0.0706	<0.05	0.0963	0.130
42818-275 SV4-3-817	<0.05	<0.05	0.0525	0.0656	<0.05	0.0671	0.183	0.0862	0.150	0.226
Sample Name	Anthracene	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane			
Reference - Choccolocco										
42818-273 SV4-1-817	<0.05	0.149	0.144	0.111	0.224	0.0739	<0.05			
42818-274 SV4-2-817	<0.05	0.173	0.177	0.173	0.306	0.139	<0.05			
42818-275 SV4-3-817	0.128	0.278	0.401	0.186	0.356	0.114	<0.05			

Site 4-animal

Sample Name	Biphenyl	2,6-Dimethylnaphthalene	1,3-Dimethylnaphthalene	1,2-Dimethylnaphthalene	2,3,5-Trimethylnaphthalene	Hexadecane	Fluorene	4,4'-Dimethylbiphenyl	1-Methylfluorene	Phenanthrene
Reference - Choccolocco										
Insects										
42818-252 T14-808	<0.10	<0.10	<0.10	<0.10	<0.10	0.107	<0.10	<0.10	<0.10	0.102
42818-254 T14-809	<0.10	<0.10	<0.10	<0.10	<0.10	0.103	<0.10	<0.10	<0.10	0.102
42818-256 T14-810	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
42818-258 T14-811	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.0636	<0.06	<0.06	<0.06
42818-261 T14-812	<0.05	<0.05	0.0632	<0.05	<0.05	<0.05	0.0536	<0.05	<0.05	0.0753
42818-262 T14-813	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07
Bats										
42818-306 TM4-1-812	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0684	<0.05	0.0798	0.126
42818-308 TM4-1-813	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.0731
42818-309 TM4-2-813	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.0773	0.142
42818-310 TM4-3-813	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0552	<0.05	<0.05	<0.05
42818-311 TM4-G2-808	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
42818-295 TM4-1-809	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0893	<0.05	<0.05	0.0534
42818-296 TM4-1-810	<0.03	<0.03	0.0361	<0.03	<0.03	<0.03	0.0488	0.0259	0.0573	0.174
42818-298 TM4-1-811	<0.08	<0.08	<0.08	<0.08	<0.08	0.134	0.241	<0.08	0.428	0.801
Fish										
42818-277 TF4-1-814	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.143	<0.05	0.106	0.133

Site 4-animal

Sample Name	Anthracene	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachloroethane
Reference - Choccolocco							
Insects							
42818-252 T14-808	<0.10	<0.10	0.116	<0.10	0.307	<0.10	<0.10
42818-254 T14-809	0.115	<0.10	<0.10	<0.10	0.292	<0.10	<0.10
42818-256 T14-810	<0.04	<0.04	<0.04	<0.04	0.0813	0.0417	<0.04
42818-258 T14-811	<0.06	<0.06	<0.06	<0.06	0.164	<0.06	<0.06
42818-261 T14-812	0.0767	0.0798	<0.05	<0.05	0.0893	<0.05	<0.05
42818-262 T14-813	<0.07	<0.07	<0.07	<0.07	0.160	<0.07	<0.07
Bats							
42818-306 TM4-1-812	0.0549	0.186	0.224	0.232	0.497	0.326	<0.05
42818-308 TM4-1-813	<0.06	0.105	0.0924	0.130	0.284	0.170	<0.06
42818-309 TM4-2-813	<0.06	0.114	0.262	0.0826	0.313	<0.06	<0.06
42818-310 TM4-3-813	0.0509	0.0661	0.116	0.0646	0.152	<0.05	<0.05
42818-311 TM4-G2-808	<10.0	15.424	17.517	18.722	35.409	<10.0	<10.0
42818-295 TM4-1-809	<0.05	0.0578	0.0809	<0.05	0.125	<0.05	<0.05
42818-296 TM4-1-810	0.0564	0.0900	0.190	0.0862	0.448	0.0604	<0.03
42818-298 TM4-1-811	0.196	0.503	1.163	0.336	2.172	0.118	<0.08
Fish							
42818-277 TF4-1-814	0.0520	0.156	0.180	0.113	0.356	<0.05	<0.05

CHAIN-OF-CUSTODY FORM

[illegible]

PLEASE CALL THE NUMBERS LISTED ABOVE FOR COMMENTS, QUESTIONS, AND QUOTATIONS. THANK YOU FOR YOUR CONTINUED PATRONAGE.

The following shows the quantifying and qualifying ion(s) for each analyte:

<u>Analyte</u>	<u>Quantifying ion</u>	<u>Qualifying ion(s)</u>
Biphenyl	154.1	76.0
2,6-Dimethylnaphthalene	156.1	141.1
1,3-Dimethylnaphthalene	141.1	156.1
1,2-Dimethylnaphthalene	141.1	156.1
2,3,5-Trimethylnaphthalene	170.1	155.1
Hexadecane	71.0	85.0 226.1
Fluorene	166.1	165.1
4,4'-Dimethylbiphenyl	182.1	167.1
1-Methylfluorene	165.1	180.1
Phenanthrene	178.1	152.1
Anthracene	178.1	152.1
2-Methylphenanthrene	192.1	165.1
9-Methylanthracene	192.1	165.1
3,6-Dimethylphenanthrene	206.1	191.1
2-Ethylanthracene	206.1	191.1
9,10-Dimethylanthracene	206.1	191.1
Hexachloroethane	201.0	166.1

Table I. Summary Table of Results for Soil and Sediment.

Sample Name	Biphenyl	2,6-Dimethylnaphthalene	1,3-Dimethylnaphthalene	1,2-Dimethylnaphthalene	2,3,5-Trimethylnaphthalene	Hexadecane	Fluorene	4,4'-Dimethyldiphenyl	1-Methylnaphthalene	Phenanthrene	Anthracene	2-Methylnaphthalene	9-Methylnaphthalene	3,6-Dimethylnaphthalene	2-Ethyl naphthalene	9,10-Dimethylnaphthalene	Hexachlorobenzene
42818-001 CONTROL	0	0	0	0.0139	0	0	0	0.00721	0.0175	0.0130	0	0	0	0.0135	0.0853	0	0
42818-002 C + 0.10 PPM	0.0419	0.0370	0.0334	0.0516	0.0596	0.0610	0.0976	0.0768	0.0906	0.0936	0.0909	0.125	0.0791	0.118	0.164	0.0273	NA
42818-002 C + 0.010 PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00396
% RECOVERY	41.9	37.0	33.4	37.7	59.6	61.0	97.6	69.6	73.1	80.6	90.9	125	79.1	105	78.7	27.3	39.6
42818-003 SB1-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.631	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0816	<0.05	<0.05
42818-004 SB1-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0721	<0.05	<0.05
42818-005 SB1-4-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0748	<0.05	<0.05	<0.05	<0.05	<0.05	0.0614	<0.05	<0.05
42818-006 SB1-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0666	<0.05	<0.05
42818-007 SB1-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0533	<0.05	<0.05
42818-008 SB2-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0558	<0.05	<0.05
42818-009 SB2-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0552	<0.05	<0.05
42818-010 SB2-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0544	<0.05	<0.05
42818-011 SB2-4-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.127	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-012 SB2-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.780	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0650	<0.05	<0.05
42818-013 C + 1.00 PPM	0.520	0.408	0.389	0.436	0.557	0.651	0.665	0.650	0.701	0.729	0.703	0.802	0.707	0.828	0.803	0.479	NA
42818-013 C + 0.050 PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0148
% RECOVERY	52.0	40.8	38.9	43.6	55.7	65.1	66.5	65.0	70.1	72.9	70.3	80.2	70.7	82.8	80.3	47.9	29.6
42818-014 SB2-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-015 SB3-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-016 SB3-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Table 1. Summary Table of Results for Soil and Sediment.

Sample Name	Biphenyl	2,6-Dimethyl naphthalene	1,3-Dimethyl naphthalene	1,2-Dimethyl naphthalene	2,3,5-Trimethyl naphthalene	Hexadecane	Fluorene	4,4'-Dimethyl Biphenyl	1-Methyl Fluorene	Phenanthrene	Anthracene	2-Methyl phenanthrene	9-Methyl anthracene	3,6-Dimethyl phenanthrene	2-Ethyl anthracene	9,10-Dimethyl anthracene	Hexachlorobenzene
42818-017 SB3-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-018 SB3-4-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0521	<0.05	<0.05
42818-019 SB3-4d-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0678	<0.05	0.0641	<0.05	<0.05	<0.05	0.0500	<0.05	<0.05
42818-020 SB3-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0510	<0.05	<0.05
42818-021 SB3-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0735	<0.05	<0.05	<0.05	<0.05	<0.05	0.0505	<0.05	<0.05
42818-022 SM1-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0680	<0.05	0.0519	<0.05	<0.05	<0.05	0.0533	<0.05	<0.05
42818-023 SM1-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-024 SM1-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0775	<0.05	<0.05	0.126	<0.05	<0.05
42818-025 C + 0.10 PPM	0.0751	0.0742	0.0643	0.0757	0.0736	0.0458	0.0822	0.102	0.110	0.111	0.103	0.135	0.105	0.127	0.155	0.0735	NA
42818-025 C + 0.010 PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000655
% RECOVERY	75.1	74.2	64.3	75.7	73.6	45.8	82.2	102	110	111	103	135	105	127	155	73.5	6.55
42818-026 SM1-4-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.0556	<0.05	<0.05	0.0659	0.0564	0.127	0.0973	0.0515	<0.05	0.0840	<0.05	0.940
42818-027 SM1-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.486	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0626	<0.05	0.0951
42818-028 SM1-5d-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0538	<0.05	0.259
42818-029 SM1-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.436	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0604	<0.05	0.410
42818-030 SM2-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.446
42818-031 SM2-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.341	<0.05	<0.05	0.0764	<0.05	0.0871	0.0635	<0.05	<0.05	0.0614	<0.05	0.370
42818-032 SM2-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.367	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0542	<0.05	0.286
42818-033 SM2-4-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.274	<0.05	<0.05	0.0735	<0.05	0.0898	0.0870	<0.05	<0.05	<0.05	<0.05	0.772
42818-034 SM2-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.227	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0713
42818-035 SM2-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.155	<0.05	<0.05	<0.05	<0.05	0.0771	0.0620	<0.05	<0.05	0.0707	<0.05	1.798

Table I. Summary Table of Results for Soil and Sediment.

Sample Name	Biphenyl	2,6-Dimethyl naphthalene	1,3-Dimethyl naphthalene	1,2-Dimethyl naphthalene	2,3,5-Trimethyl naphthalene	Hexadecane	Fluoranthene	4,4'-Dimethyl biphenyl	1-Methyl fluorene	Phenanthrene	Anthracene	2-Methyl phenanthrene	9-Methyl anthracene	3,6-Dimethyl phenanthrene	2-Ethyl anthracene	9,10-Dimethyl anthracene	Hexachlorobenzene
42818-036 SM3-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0443	<0.05	0.398
42818-037 C + 0.010 PPM	0.00854	0.0134	0.00707	0.0124	0.00970	0.0226	0.0166	0.0158	0.0201	0.0175	0.0235	0.0304	0.0171	0.0140	0.0279	0.0103	NA
42818-037 C + 0.001 PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000428
% RECOVERY	85.4	134	70.7	124	97.0	226	166	158	201	175	235	304	171	140	279	103	42.8
42818-038 SM3-1d-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-039 SM3-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-040 SM3-3-816	<0.05	<0.05	0.0670	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-041 SM3-4-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-042 SM3-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-043 SM3-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-044 SU1-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0535	<0.05	<0.05
42818-045 SU1-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.185	<0.05	<0.05
42818-046 SU1-2d-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-047 SU1-3-816	<0.05	<0.05	0.245	<0.05	<0.05	0.0691	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.154
42818-048 SU1-4-816	<0.05	<0.05	0.373	<0.05	<0.05	0.194	<0.05	0.0827	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0978	<0.05	0.285
42818-049 C + 0.10 PPM	0.0626	0.0642	0.0607	0.0689	0.0678	0.107	0.0833	0.0845	0.0936	0.101	0.105	0.127	0.0989	0.122	0.130	0.0606	NA
42818-049 C + 0.010 PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00343
% RECOVERY	62.6	64.2	60.7	68.9	67.8	107	83.3	84.5	93.6	101	105	127	98.9	122	130	60.6	34.3
42818-050 SU1-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0513	<0.05	<0.05
42818-051 SU1-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0514	<0.05	0.143

Table 1. Summary Table of Results for Soil and Sediment.

Sample Name	Biphenyl	2,6-Dimethyl naphthalene	1,3-Dimethyl naphthalene	1,2-Dimethyl naphthalene	2,3,5-Trimethyl naphthalene	Hexadecane	Fluorene	4,4'-Dimethyl Biphenyl	1-Methyl Fluorene	Phenanthrene	Anthracene	2-Methyl phenanthrene	9-Methyl anthracene	3,6-Dimethyl phenanthrene	2-Ethyl anthracene	9,10-Dimethyl anthracene	Hexachlorocyclopentadiene
42818-052 SU2-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-053 SU2-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0541	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.134	<0.05	<0.05
42818-053 SU2-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0515	<0.05	0.184
42818-055 SU2-4-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0559	<0.05	<0.05
42818-056 SU2-4a-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0537	<0.05	0.0966
42818-057 SU2-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0542	<0.05	0.170
42818-058 SU2-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0926
42818-059 SU3-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0736	<0.05	<0.05
42818-060 SU3-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0643	<0.05	0.197
42818-061 C + 0.10 PPM	0.0685	0.0715	0.0691	0.0767	0.0744	0.0945	0.0860	0.0839	0.0848	0.0916	0.0891	0.107	0.0841	0.104	0.111	0.0463	NA
42818-061 C + 0.010 PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00355
% RECOVERY	68.5	71.5	69.1	76.7	74.4	94.5	86.0	83.9	84.8	91.6	89.1	107	84.1	105.0	111	46.3	35.5
42818-062 SU3-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0954
42818-063 SU3-4-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-064 SU3-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-065 SU3-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0649	<0.05	<0.05
42818-066 SB4-1-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.460
42818-067 SB4-2-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0526	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-068 SB4-2d-817	<0.05	<0.05	0.0641	<0.05	<0.05	<0.05	<0.05	<0.05	0.0522	<0.05	<0.05	<0.05	<0.05	<0.05	0.209	<0.05	0.101
42818-069 SB4-3-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.296
42818-070 SB4-4-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Table 1. Summary Table of Results for Soil and Sediment.

Sample Name	Biphenyl	2,6-Dimethyl naphthalene	1,3-Dimethyl naphthalene	1,2-Dimethyl naphthalene	2,3,5-Trimethyl naphthalene	Hexadecane	Fluorane	4,4'-Dimethyl Biphenyl	1-Methyl Fluorene	Phenanthrene	Anthracene	2-Methyl biphenanthrene	9-Methyl anthracene	3,6-Dimethyl biphenanthrene	2-Ethyl anthracene	9,10-Dimethyl anthracene	Hexachlorobenzene
42818-071 SB4-5-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.148	<0.05	<0.05
42818-072 SB4-6-817	<0.05	<0.05	<0.05	<0.05	<0.05	1.307	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.138	<0.05	<0.05
42818-073 C + 0.10 PPM	0.0130	0.0135	0.0106	0.0221	0.0151	0.0385	0.0230	0.0283	0.0682	0.0238	0.0242	0.0228	0.0675	0.0272	0.0552	0.0243	NA
42818-073 C + 0.001 PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000546
% RECOVERY	13.0	13.5	10.8	22.1	15.1	38.5	23.0	28.3	68.2	23.8	24.2	22.8	67.5	27.2	55.2	24.3	54.6
42818-074 SM4-1-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-075 SM4-2-817	<0.05	<0.05	0.166	<0.05	<0.05	0.0853	<0.05	<0.05	0.0517	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0787
42818-076 SM4-3-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0517	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.187
42818-077 SM4-4-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0704	<0.05	<0.05	<0.05	<0.05	<0.05	0.0560	<0.05	0.195
42818-078 SM4-5-817	<0.05	<0.05	<0.05	<0.05	<0.05	0.225	<0.05	<0.05	0.0827	<0.05	<0.05	0.0756	0.0530	<0.05	0.131	<0.05	0.302
42818-079 SM4-6-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0912	0.104	<0.05	<0.05	<0.05	<0.05	0.221	<0.05	0.430
42818-080 SU4-1-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0660	<0.05	<0.05	<0.05	<0.05	<0.05	0.227	0.105	0.171
42818-081 SU4-2-817	<0.05	<0.05	<0.05	<0.05	<0.05	0.315	<0.05	<0.05	0.0756	<0.05	<0.05	<0.05	0.0514	<0.05	0.440	0.0764	0.238
42818-082 SU4-3-81	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0575	<0.05	<0.05	<0.05	<0.05	<0.05	0.276	0.0542	0.132
42818-083 SU4-4-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.227	<0.05	0.209
42818-084 SU4-5-817	<0.05	<0.05	<0.05	<0.05	<0.05	0.479	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0502	0.230	<0.05	0.123
42818-085 C + 0.050 PPM	0.0441	0.0479	0.0470	0.0647	0.0588	0.0363	0.0604	0.0656	0.143	0.509	0.128	0.241	0.0898	0.0981	0.189	0.0393	NA
42818-085 C + 0.005 PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00135
% RECOVERY	88.2	95.7	94.0	129	118	72.6	121	131	286	1018	256	482	180	196	378	78.6	27.0
42818-086 SU4-6-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0529	0.0526	<0.05	0.0647	<0.05	<0.05	<0.05	<0.05	0.199

Table 1. Summary Table of Results for Soil and Sediment.

Sample Name	Biphenyl	2,6-Dimethyl naphthalene	1,3-Dimethyl naphthalene	1,2-Dimethyl naphthalene	2,3,5-Trimethyl naphthalene	Hexadecane	Trinorbornene	4,4'-Dimethyl biphenyl	1-Methyl fluoranthene	Phenanthrene	Anthracene	2-Methyl phenanthrene	9-Methyl anthracene	3,6-Dimethyl phenanthrene	2-Ethyl anthracene	9,10-Dimethyl anthracene	Hexachlorobenzene
42818-087 SU4-64-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0902	<0.05	0.0656
42818-088 SD2-1-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.109	<0.05	0.0603
42818-089 SD2-16-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.118	<0.05	0.183
42818-090 SD2-2-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0680	<0.05	<0.05
42818-091 SD2-3-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0972	<0.05	0.190
42818-092 SD2-4-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.184	<0.05	0.490
42818-093 SD2-5-815	<0.05	<0.05	<0.05	<0.05	<0.05	0.377	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.231	<0.05	<0.05
42818-094 SD2-6-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.143	<0.05	0.455
42818-095 SD2-7-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.112	<0.05	0.200
42818-096 SD2-8-815	<0.05	<0.05	<0.05	<0.05	<0.05	0.673	<0.05	<0.05	0.0639	<0.05	<0.05	<0.05	<0.05	<0.05	0.147	<0.05	0.259
42818-097 SD2-9-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.137	<0.05	<0.05
42818-098 C + 0.050 PPM	0.0307	0.0324	0.0311	0.0392	0.0365	0.0326	0.0395	0.0429	0.0438	0.0488	0.0430	0.0521	0.0237	0.0160	0.0238	0.000	NA
42818-098 C + 0.005 PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000664
% RECOVERY	61.4	64.8	62.2	78.4	73.0	65.2	79.0	85.8	87.6	97.6	86	104	47.4	32.0	47.6	0.0	17.3
42818-099 SD2-10-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-100 SD1-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0562
42818-101 SD1-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.133
42818-102 SD1-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.147	<0.05	0.198	0.422	<0.05	<0.05
42818-103 SD3-1-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0845
42818-104 SD3-2-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.237	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-105 SD3-3-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0637	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Table 1. Summary Table of Results for Soil and Sediment.

Sample Name	Biphenyl	2,6-Dimethyl naphthalene	1,3-Dimethyl naphthalene	1,2-Dimethyl naphthalene	Hexadecane	Phenanthrene	Anthracene	2-Methyl phenanthrene	9-Methyl phenanthrene	3,6-Dimethyl phenanthrene	2-Ethyl phenanthrene	9,10-Dimethyl phenanthrene	Hexachlorobenzene
42818-106 SD3-4-816	<0.05	<0.05	<0.05	<0.05	<0.05	0.0794	0.0847	<0.05	0.0784	<0.05	0.163	<0.05	<0.05
42818-107 SD3-5-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0985
42818-108 SD3-6-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.112
42818-109 SD3-7-816	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.247
42818-110 SD3-8-816	<0.05	<0.05	<0.05	<0.05	0.536	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.137
42818-111 C + 0.10 PPM	0.0696	0.0720	0.0666	0.0736	0.0691	0.0794	0.109	0.112	0.131	0.122	0.132	0.0813	NA
42818-111 C + 0.010 PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00417
% RECOVERY	69.8	72.0	66.6	59.7	69.1	79.4	109	112	131	122	149	81.3	41.7
42818-112 SD3-9-816	<0.05	<0.05	<0.05	<0.05	0.647	<0.05	<0.05	<0.05	<0.05	<0.05	0.0947	<0.05	0.286
42818-113 SD3-10-816	<0.05	<0.05	<0.05	<0.05	0.502	<0.05	<0.05	<0.05	<0.05	<0.05	0.0804	<0.05	0.214
42818-114 SD4-1-817	<0.05	<0.05	<0.05	<0.05	0.343	<0.05	<0.05	<0.05	<0.05	<0.05	0.0586	<0.05	0.421
42818-115 SD4-2-817	<0.05	<0.05	<0.05	<0.05	0.454	<0.05	<0.05	<0.05	<0.05	<0.05	0.0707	<0.05	0.374
42818-116 SD4-3-817	<0.05	<0.05	<0.05	<0.05	0.366	<0.05	<0.05	<0.05	<0.05	<0.05	0.0669	<0.05	<0.05
42818-117 SD4-4-817	<0.05	<0.05	<0.05	<0.05	0.426	<0.05	<0.05	<0.05	<0.05	<0.05	0.147	<0.05	0.0732
42818-118 SD4-5-817	<0.05	<0.05	<0.05	<0.05	0.247	<0.05	<0.05	<0.05	<0.05	<0.05	0.108	<0.05	<0.05
42818-119 SD4-6-817	<0.05	<0.05	<0.05	<0.05	0.255	<0.05	<0.05	<0.05	<0.05	<0.05	0.105	<0.05	0.164
42818-120 SD4-7-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-121 SD4-7d-817	<0.05	<0.05	<0.05	<0.05	0.208	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42818-122 SD4-8-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0668	<0.05	0.0790	<0.05	<0.05
42818-123 SD4-9-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0608	0.0524	<0.05	0.0586	<0.05	<0.05
42818-124 SD4-10-817	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0815

Table II. Summary Table of Results for Water.

Sample Name	Biphenyl	2,6-Dimethyl biphenylene	1,3-Dimethyl biphenylene	1,2-Dimethyl biphenylene	2,3,5-Trimethyl biphenylene	Hexadecane	Fluorane	4,4'-Dimethyl Biphenyl	1-Methyl Fluorane	Phenanthrene	Anthracene	2-Methyl biphenylene	9-Methyl biphenylene	3,6-Dimethyl biphenylene	2-Ethyl biphenylene	9,10-Dimethyl biphenylene	Hexachlorocyclopentadiene
42818-200 C + 20.0 PPB	5.98	3.39	3.50	4.25	3.45	5.33	3.39	2.07	3.79	5.06	5.01	2.86	3.62	2.42	1.85	1.89	NA
42818-200 C + 1.0 PPB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.517
% RECOVERY	29.1	17.0	17.0	19.0	9.75	19.7	17.0	6.45	15.1	21.8	20.3	12.4	13.7	10.2	4.9	8.1	51.6
42818-201 SW1-1-816	<1.0	<1.0	<1.0	<1.0	1.10	<1.0	1.92	<1.0	<1.0	<1.0	1.03	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-202 SW1-2-816	<1.0	<1.0	<1.0	<1.0	1.13	<1.0	1.92	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-203 SW1-3-816	<1.0	<1.0	<1.0	<1.0	1.21	<1.0	4.03	<1.0	<1.0	<1.0	1.29	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-204 SW2-1-815	<1.0	<1.0	<1.0	<1.0	1.21	<1.0	2.57	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-205 SW2-1d-815	<1.0	<1.0	<1.0	<1.0	1.54	<1.0	3.31	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-206 SW2-2-815	<1.0	<1.0	<1.0	<1.0	1.31	<1.0	2.49	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-207 SW2-3-815	<1.0	<1.0	<1.0	<1.0	1.89	<1.0	6.60	<1.0	1.00	1.13	1.44	<1.0	1.64	<1.0	<1.0	<1.0	<1.0
42818-208 SW2-4-815	<1.0	<1.0	<1.0	<1.0	1.09	<1.0	2.49	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-209 SW2-5-815	<1.0	<1.0	<1.0	<1.0	1.25	<1.0	2.96	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-210 SW2-6-815	<1.0	<1.0	<1.0	<1.0	1.15	<1.0	3.18	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-211 C + 2.00 PPB	1.64	1.63	1.58	1.95	2.77	2.04	4.53	1.68	2.58	2.72	2.60	2.18	2.59	2.19	1.82	1.54	NA
42818-211 C + 0.20 PPB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0898
% RECOVERY	73.5	81.5	72.5	75.0	63.5	32.5	227	75.0	90.0	101	82.0	89.5	85.0	90.0	47.5	63.5	44.2
42818-212 SW2-7-815	<1.0	<1.0	<1.0	<1.0	2.20	<1.0	7.04	<1.0	1.09	1.24	1.44	<1.0	1.88	<1.0	<1.0	<1.0	<1.0
42818-213 SW2-8-815	<1.0	<1.0	<1.0	<1.0	1.13	<1.0	3.72	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-214 SW2-9-815	<1.0	<1.0	<1.0	<1.0	1.60	<1.0	5.15	<1.0	<1.0	<1.0	1.09	<1.0	1.15	<1.0	<1.0	<1.0	<1.0
42818-215 SW3-1-816	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

Table II. Summary Table of Results for Water.

Sample Name	Biphenyl	2,6-Dimethyl naphthalene	1,3-Dimethyl naphthalene	1,2-Dimethyl naphthalene	2,3,5-Trimethyl naphthalene	Hexadecane	Fluorene	4,4'-Dimethyl biphenyl	1-Methylfluorene	Phenanthrene	Anthracene	2-Methyl phenanthrene	9-Methyl phenanthrene	3,6-Dimethyl phenanthrene	2-Ethyl phenanthrene	9,10-Dimethyl phenanthrene	Hexachloroethane
42818-216 SW3-2-816	<1.0	<1.0	<1.0	<1.0	1.31	<1.0	4.08	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-217 SW3-3-816	<1.0	<1.0	<1.0	<1.0	2.26	<1.0	9.43	<1.0	1.25	1.23	2.75	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-218 SW3-6-816	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.66	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-219 SW3-8-816	<1.0	<1.0	<1.0	<1.0	1.32	<1.0	3.70	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-220 SW4-1-817	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.29	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-221 SW4-2-817	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.37	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-222 C + 0.20 PPB	0.32	0.25	0.23	0.66	1.60	0.33	6.21	0.35	1.18	1.02	1.28	0.85	1.21	0	1.01	0.37	NA
42818-222 C + 0.020 PPB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00482
% RECOVERY	75.0	125	50.0	105	50.0	0	700	85.0	200	155	160	230	160	0	0.0	50.0	16.9
42818-223 SW4-3-817	<1.0	<1.0	<1.0	<1.0	2.27	2.03	8.07	<1.0	1.22	1.25	1.63	<1.0	1.55	<1.0	1.17	<1.0	<1.0
42818-224 SW4-4-817	<1.0	<1.0	<1.0	<1.0	1.76	<1.0	6.80	<1.0	<1.0	<1.0	1.45	<1.0	1.13	<1.0	<1.0	<1.0	<1.0
42818-225 SW4-5-817	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-226 SW4-6-817	<1.0	<1.0	<1.0	<1.0	1.94	2.41	7.60	<1.0	1.12	<1.0	1.33	<1.0	1.21	<1.0	1.14	<1.0	<1.0
42818-227 SW4-7-817	<1.0	<1.0	<1.0	<1.0	1.68	2.27	7.09	<1.0	<1.0	<1.0	1.29	<1.0	1.12	<1.0	1.07	<1.0	<1.0
42818-228 SW4-7d-817	<1.0	<1.0	<1.0	<1.0	1.56	2.27	5.34	<1.0	<1.0	<1.0	1.10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-229 SW4-8-817	<1.0	<1.0	<1.0	<1.0	1.59	1.78	5.56	<1.0	<1.0	<1.0	1.18	<1.0	<1.0	<1.0	1.00	<1.0	<1.0
42818-230 SW4-9-817	<1.0	<1.0	<1.0	<1.0	1.35	<1.0	4.42	<1.0	<1.0	<1.0	1.00	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-231 SW4-10-817	<1.0	<1.0	<1.0	<1.0	1.45	<1.0	5.66	<1.0	<1.0	<1.0	1.03	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42818-232 Control Water	0.17	0	0.13	0.45	1.50	1.39	4.81	0.18	0.78	0.71	0.96	0.39	0.89	0.39	0.87	0.27	0.00145

Table III. Summary Table of Results for Bats and Guano.

Sample Name	Biphenyl	2,6-Dimethyl naphthalene	1,3-Dimethyl naphthalene	1,2-Dimethyl naphthalene	2,3,5-Trimethyl naphthalene	Hexadecane	Fluorene	4,4'-Dimethyl Biphenyl	1-Methyl Fluorene	Phenanthrene	Anthracene	2-Methyl phenanthrene	9-Methyl naphthalene	3,6-Dimethyl phenanthrene	2-Ethyl naphthalene	9,10-Dimethyl naphthalene	Heptachlorodibenz
42818-290 C + 0.10 PPM	0.0995	0.0909	0.0874	0.0946	0.104	0.107	0.106	0.106	0.119	0.130	0.138	0.158	0.180	0.162	0.245	0.0285	NA
42818-290 C + 0.010 PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00411
% RECOVERY	99.5	90.9	87.4	94.6	104	107	106	106	119	130	138	158	180	162	245	28.5	41.1
42818-291 TM1-1-808	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	0.236	<0.09	0.290	0.172	0.0988	0.221	0.323	0.169	0.525	<0.09	<0.09
42818-292 TM1-2-809	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.0659	<0.04	0.0454	0.0911	0.0430	0.0843	0.0689	0.149	0.284	<0.04	<0.04
42818-293 TM3-1-809	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.105	<0.10	<0.10	0.156	<0.10	0.247	0.238	0.326	0.551	<0.10	<0.10
42818-294 TM3-2-810	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.132	<0.10	<0.10	0.156	<0.10	0.207	0.225	0.184	0.514	<0.10	<0.10
42818-295 TM4-1-809	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0893	<0.05	<0.05	0.0534	<0.05	0.0578	0.0809	<0.05	0.125	<0.05	<0.05
42818-296 TM4-1-810	<0.03	<0.03	0.0361	<0.03	<0.03	<0.03	0.0488	0.0259	0.0573	0.174	0.0564	0.0900	0.190	0.0862	0.448	0.0604	<0.03
42818-297 TM3-6-811	<0.08	<0.08	<0.08	<0.08	<0.08	0.0983	0.152	0.113	0.267	0.480	0.141	0.283	0.732	0.209	0.818	0.0844	<0.08
42818-298 TM4-1-811	<0.08	<0.08	<0.08	<0.08	<0.08	0.134	0.241	<0.08	0.428	0.801	0.196	0.503	1.163	0.336	2.172	0.118	<0.08
42818-299 TM2-1-812	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.0664	<0.04	0.0665	0.117	0.0592	0.135	0.121	0.124	0.285	<0.04	<0.04
42818-300 TM2-11-812	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0653	<0.05	0.105	0.142	0.163	0.318	<0.05	<0.05
42818-301 TM2-2-812	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.115	<0.10	<0.10	0.131	<0.10	0.189	0.122	0.249	0.489	0.252	<0.10
42818-302 C + 1.00 PPM	0.799	0.698	0.712	0.752	0.887	0.916	0.405	0.961	1.051	1.147	1.051	1.145	1.264	1.194	1.459	0.820	NA
42818-302 C + 0.060 PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0127
% RECOVERY	80.0	69.8	71.2	75.2	88.7	91.6	40.5	96.1	105	115	105	115	126	119	146	82.0	25.4
42818-303 TM2-3-812	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.131	<0.10	0.248	0.471	0.127	0.275	0.764	0.239	1.150	<0.10	<0.10
42818-304 TM2-4-812	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.169	<0.10	0.241	0.439	0.136	0.334	0.607	0.211	1.368	<0.10	<0.10
42818-305 TM2-5-812	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	0.0850	<0.07	<0.07	0.0931	0.0742	0.148	0.270	0.135	0.294	<0.07	<0.07
42818-306 TM4-1-812	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0684	<0.05	0.0798	0.126	0.0549	0.186	0.224	0.232	0.497	0.326	<0.05
42818-307 TM2-1-813	<0.10	<0.10	<0.10	<0.10	<0.10	0.116	0.263	0.162	0.317	0.519	0.159	0.370	0.862	0.225	1.363	<0.10	<0.10
42818-308 TM4-1-813	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.0731	<0.06	0.105	0.0924	0.130	0.284	0.170	<0.06
42818-309 TM4-2-813	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.0773	0.142	<0.06	0.114	0.262	0.0826	0.313	<0.06	<0.06
42818-310 TM4-3-813	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0552	<0.05	<0.05	<0.05	0.0509	0.0661	0.116	0.0646	0.152	<0.05	<0.05

Table III. Summary Table of Results for Bats and Guano.

Sample Name	Biphenyl	2,6-Dimethyl naphthalene	1,3-Dimethyl naphthalene	1,2-Dimethyl naphthalene	2,3,5-Trimethyl naphthalene	Hexadecane	Fluorene	4,4'-Dimethyl biphenyl	1-Methyl fluorene	Phenanthrene	Anthracene	2-Methyl biphenylanthracene	9-Methyl biphenylanthracene	3,6-Dimethyl biphenylanthracene	2-Ethyl biphenylanthracene	9,10-Dimethyl biphenylanthracene	Hexachlorocyclopentadiene
42818-311 TM4-Q2-808	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	15.424	17.517	18.722	35.409	<10.0	<10.0
42818-312 TM2-Q-812	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	6.444	12.616	<6.0	<6.0
42818-313 TM2-Q-813	<17.0	<17.0	<17.0	<17.0	<17.0	<17.0	18.893	<17.0	17.309	<17.0	<17.0	<17.0	21.983	<17.0	61.308	<17.0	<17.0
42818-314 TM2-6-812	<0.05	<0.05	<0.05	<0.05	<0.05	0.0509	0.112	<0.05	0.122	0.203	0.0707	0.168	0.340	0.116	0.627	<0.05	<0.05

Table IV. Summary Table of Results for Fish.

Sample Name	Biphenyl	2,6-Dimethyl naphthalene	1,3-Dimethyl naphthalene	1,2-Dimethyl naphthalene	2,3,5-Trimethyl naphthalene	Hexadecane	Fluorocane	4,4'-Dimethyl Biphenyl	1-Methyl Fluorene	Phenanthrene	Anthracene	2-Methyl phenanthrene	9-Methyl anthracene	3,6-Dimethyl phenanthrene	2-Ethyl anthracene	9,10-Dimethyl anthracene	Hexachlorocyclopentadiene
42818-276 C + 0.10 PPM	0.0774	0.0930	0.0920	0.118	0.106	0.102	0.191	0.125	0.165	0.130	0.125	0.147	0.154	0.118	0.228	0.0141	NA
42818-276 C + 0.010 PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00075
% RECOVERY	77.4	93.0	92.0	118	106	102	191	125	165	130	125	147	154	118	228	14.1	47.5
42818-277 TF4-1-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.143	<0.05	0.106	0.133	0.0520	0.156	0.180	0.113	0.356	<0.05	<0.05
42818-278 TF2-1a-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.317	<0.05	0.0644	0.129	0.0651	0.126	0.125	0.119	0.259	<0.05	<0.05
42818-279 TF2-1b-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0770	<0.05	0.0580	0.119	0.0568	0.108	0.0554	0.139	0.295	0.142	<0.05
42818-280 TF2-2-815	<0.05	<0.05	<0.05	<0.05	<0.05	0.0695	0.340	0.0987	0.261	0.433	0.1215	0.275	0.403	0.190	0.981	<0.05	<0.05
42818-281 TF2-3-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.283	<0.05	0.101	0.169	0.0653	0.283	0.122	0.252	0.450	0.251	<0.05
42818-282 TF2-4-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.234	<0.05	<0.05	0.0885	<0.05	0.0731	0.0619	0.0534	0.199	<0.05	<0.05
42818-283 TF2-5-815	<0.05	<0.05	<0.05	<0.05	<0.05	0.0621	0.333	0.0803	0.202	0.344	0.0952	0.233	0.338	0.131	0.761	0.0720	<0.05
42818-284 TF2-6-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.210	<0.05	<0.05	0.0775	<0.05	0.0891	0.0565	0.0736	0.167	<0.05	<0.05
42818-285 TF3-1-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.172	<0.05	<0.05	0.0539	0.0569	0.0578	<0.05	<0.05	0.119	<0.05	<0.05
42818-286 TF3-2-815	<0.05	<0.05	<0.05	<0.05	0.0635	0.0761	0.348	0.0898	0.193	0.316	0.100	0.181	0.313	0.119	0.669	<0.05	<0.05
42818-287 TF3-3-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.113	<0.05	<0.05	<0.05	<0.05	0.0664	0.0612	0.0607	0.141	<0.05	<0.05
42818-288 TF3-4-815	<0.05	<0.05	<0.05	<0.05	<0.05	0.0710	0.361	0.0949	0.196	0.321	0.0737	0.213	0.301	0.132	0.682	0.0513	<0.05
42818-289 TF3-5-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.229	<0.05	<0.05	<0.05	<0.05	0.0559	0.0659	<0.05	0.185	<0.05	<0.05

Table V. Summary Table of Results for Insects.

Sample Name	Biphenyl	2,6-Dimethyl naphthalene	1,3-Dimethyl naphthalene	1,2-Dimethyl naphthalene	2,3,5-Triethyl naphthalene	Hexadecane	Fluorane	4,4'-Dimethyl Biphenyl	1-Methyl Fluorane	Picene	Anthracene	2-Methyl biphenyl	9-Methyl anthracene	3,6-Dimethyl biphenyl	2-Ethyl anthracene	9,10-Dimethyl anthracene	Hexachlorobenzene
42818-250 C + 0.10 PPM	0.0700	0.0527	0.0511	0.0588	0.0685	0.0974	0.0532	0.0933	0.0823	0.115	0.118	0.140	0.138	0.151	0.170	0.0927	NA
42818-250 C + 0.010 PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00179
% RECOVERY	70.0	52.7	51.1	58.8	68.5	97.4	53.2	93.3	82.3	115	118	140	138	151	170	92.7	17.9
42818-251 T11-808	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.318	<0.50	<0.50
42818-252 T14-808	<0.10	<0.10	<0.10	<0.10	<0.10	0.107	<0.10	<0.10	<0.10	0.102	<0.10	<0.10	0.116	<0.10	0.307	<0.10	<0.10
42818-253 T11-809	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.0429	<0.03	<0.03	<0.03	0.0393	0.0668	<0.03	<0.03
42818-254 T14-809	<0.10	<0.10	<0.10	<0.10	<0.10	0.103	<0.10	<0.10	<0.10	0.102	0.115	<0.10	<0.10	<0.10	0.292	<0.10	<0.10
42818-255 T13-810	<0.04	<0.04	0.040	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.0679	<0.04	<0.04	0.110	<0.04	<0.04
42818-256 T14-810	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.0813	0.0417	<0.04
42818-257 T13-811	<0.06	0.0639	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.0601	<0.06	<0.06	<0.06	0.150	<0.06	<0.06
42818-258 T14-811	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.0636	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.164	<0.06	<0.06
42818-259 T12-812	<0.05	<0.05	0.0557	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.115	<0.05	<0.05
42818-260 T12-813	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0566	<0.05	<0.05	0.0648	0.0695	0.0510	<0.05	0.0908	0.128	<0.05	<0.05
42818-261 T14-812	<0.05	<0.05	0.0632	<0.05	<0.05	<0.05	0.0536	<0.05	<0.05	0.0753	0.0767	0.0798	<0.05	<0.05	0.0893	<0.05	<0.05
42818-262 T14-813	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	0.160	<0.07	<0.07

Table VI. Summary Table of Results for Bark and Leaves.

Sample Name	Biphenyl	2,6-Dimethylnaphthalene	1,3-Dimethylnaphthalene	1,2-Dimethylnaphthalene	2,3,5-Trimethylnaphthalene	Hexadecane	Fluorane	4,4'-Dimethylbiphenyl	1-Methylfluorane	Phenanthrene	Anthracene	2-Methylphenanthrene	9-Methylanthracene	3,6-Dimethylphenanthrene	2-Ethylanthracene	9,10-Dimethylanthracene	Hexachlorocyclopentadiene
42818-263 C + 0.10 PPM	0.104	0.131	0.591	0.116	0.161	0.180	0.211	0.187	0.334	0.473	0.209	0.460	0.682	0.320	0.753	0.160	NA
42818-263 C + 0.010 PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00525
% RECOVERY	104	131	591	116	161	180	211	187	334	473	209	460	682	320	753	160	52.5
42818-264 SV1-2-816	0.898	<0.05	0.250	<0.05	0.0645	0.0786	0.101	0.0647	0.122	0.120	0.114	0.299	0.289	0.243	0.358	0.516	<0.05
42818-265 SV1-3-816	0.253	<0.05	0.800	0.268	1.137	0.240	0.0920	<0.05	0.111	0.159	0.0949	0.245	0.244	0.160	2.779	0.190	<0.05
42818-266 SV1-1-816	0.0673	0.234	0.675	2.856	1.548	0.870	0.492	0.347	0.158	0.314	0.160	0.309	0.327	0.278	0.377	0.369	<0.05
42818-267 TV2-1-815	<0.05	0.0654	8.408	<0.05	0.0833	0.169	0.0985	0.0983	0.109	0.142	<0.05	0.207	0.154	0.189	0.359	0.149	<0.05
42818-268 TV2-2-815	0.0833	0.0817	0.326	<0.05	0.292	0.304	0.280	0.212	0.579	0.910	0.243	2.174	<0.05	0.300	4.493	0.122	<0.05
42818-269 TV2-3-815	<0.04	<0.04	0.0655	<0.04	<0.04	<0.04	0.148	0.0530	0.0915	0.101	0.0434	0.138	0.171	0.0984	0.175	0.0833	<0.04
42818-270 TV3-1-815	<0.05	<0.05	0.206	<0.05	<0.05	0.0643	0.117	<0.05	0.0900	<0.05	0.0662	0.186	0.233	0.141	0.233	0.103	<0.05
42818-271 TV3-2-815	<0.05	<0.05	0.0919	0.0614	0.0667	0.0526	0.179	0.153	0.309	0.513	0.157	0.383	0.696	0.176	0.888	0.173	<0.05
42818-272 TV3-3-815	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.113	<0.05	0.0870	0.101	0.0607	0.168	0.226	0.123	0.202	0.0530	<0.05
42818-273 SV4-1-817	0.133	<0.05	0.149	<0.05	<0.05	0.0735	0.183	0.0734	0.102	0.0666	<0.05	0.149	0.144	0.111	0.224	0.0739	<0.05
42818-274 SV4-2-817	<0.05	<0.05	0.0526	<0.05	<0.05	0.0683	0.0706	<0.05	0.0963	0.130	<0.05	0.173	0.177	0.173	0.306	0.139	<0.05
42818-275 SV4-3-817	<0.05	<0.05	0.0525	0.0656	<0.05	0.0671	0.183	0.0862	0.150	0.226	0.128	0.278	0.401	0.186	0.356	0.114	<0.05

Table VII. Summary Table of Results for GC/MSD Confirmation.

Sample Name	Det	Biphenyl	2,6-Dimethylbiphenylene	1,3-Dimethylbiphenylene	1,2-Dimethylbiphenylene	2,3,5-Trimethylbiphenylene	Hexadecane	Phenanthrene	4,4'-Dimethylbiphenyl	1-Methylphenanthrene	Phenanthrene	Anthracene	2-Methylphenanthrene	9-Methylphenanthrene	3,6-Dimethylphenanthrene	2-Ethylphenanthrene	9,10-Dimethylphenanthrene	Hexachlorobenzene
42818-078 8M4-5-817-PNA	FID	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.0827	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.0894	< 0.05	< 0.05
42818-078 8M4-5-817-PNA	MSD	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
42818-078 8M4-5-817-FL	FID	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.0756	0.053	< 0.05	< 0.05	< 0.05	< 0.05
42818-078 8M4-5-817-FL	MSD	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
42818-096 8D2-8-815-FL	FID	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.0835	< 0.05	< 0.05
42818-096 8D2-8-815-FL	MSD	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
42818-207 SW2-3-815	FID	< 1.0	< 1.0	< 1.0	< 1.0	1.89	< 1.0	6.60	< 1.0	1.00	1.13	1.44	< 1.0	1.64	< 1.0	< 1.0	< 1.0	< 1.0
42818-207 SW2-3-815	MSD	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	6.32	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
42818-223 SW4-3-817	FID	< 1.0	< 1.0	< 1.0	< 1.0	2.27	2.03	8.07	< 1.0	1.22	1.25	1.63	< 1.0	1.55	< 1.0	1.17	< 1.0	< 1.0
42818-223 SW4-3-817	MSD	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
42818-260 TT2-813-PNA	FID	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
42818-260 TT2-813-PNA	MSD	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
42818-260 TT2-813-FL	FID	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.051	< 0.05	0.058	0.0853	< 0.05	< 0.05
42818-260 TT2-813-FL	MSD	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
42818-261 TT4-812-PNA	FID	< 0.05	< 0.05	0.0518	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.0264	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
42818-261 TT4-812-PNA	MSD	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
42818-261 TT4-812-FL	FID	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.0535	0.052	0.0534	< 0.05	< 0.05	0.0893	< 0.05	< 0.05
42818-261 TT4-812-FL	MSD	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
42818-266 SV1-1-816-PNA	FID	0.0673	< 0.05	0.675	< 0.05	< 0.05	0.687	0.436	0.288	0.0995	0.212	0.0863	0.195	0.117	0.147	0.181	0.0831	< 0.05
42818-266 SV1-1-816-PNA	MSD	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
42818-266 SV1-1-816-FL	FID	< 0.05	0.21	< 0.05	2.86	1.19	0.183	0.0553	0.0588	0.0583	0.102	0.0736	0.115	0.21	0.131	0.196	0.286	0.214
42818-266 SV1-1-816-FL	MSD	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Table VII. Summary Table of Results for GC/MSD Confirmation.

Sample Name	Dt	Biphenyl	2,6-Dimethyl biphenylene	1,3-Dimethyl biphenylene	1,2-Dimethyl biphenylene	2,3,5-Trimethyl biphenylene	Hexadecane	Fluorene	4,4'-Dimethyl Biphenyl	1-Methyl Fluorene	Phenanthrene	Anthracene	2-Methyl biphenylene	9-Methyl biphenylene	3,6-Dimethyl biphenylene	2-Ethyl biphenylene	9,10-Dimethyl biphenylene	Hexachlorodibenzene
42818-268 TV2-2-815-PNA	FID	< 0.05	< 0.05	0.3257	< 0.05	0.0753	0.236	0.0759	0.095	0.384	0.581	0.107	0.222	< 0.05	0.149	3.37	< 0.05	0.0967
42818-268 TV2-2-815-PNA	MSD	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
42818-268 TV2-2-815-FL	FID	< 0.05	< 0.05	< 0.05	< 0.05	0.217	0.0674	0.204	0.117	0.194	0.329	0.136	1.952	< 0.05	0.151	1.12	0.122	0.294
42818-268 TV2-2-815-FL	MSD	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
42818-280 TF2-2-815-PNA	FID	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.0506	0.173	0.297	< 0.05	0.0998	< 0.05	0.0801	0.596	< 0.05	< 0.05
42818-280 TF2-2-815-PNA	MSD	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
42818-280 TF2-2-815-FL	FID	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.292	< 0.05	0.0875	0.136	0.0845	0.175	0.367	0.11	0.386	< 0.05	< 0.05
42818-280 TF2-2-815-FL	MSD	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	3.66	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
42818-291 TM1-1-808-PNA	FID	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	0.0918	< 0.09	0.236	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	0.189	< 0.09	< 0.09
42818-291 TM1-1-808-PNA	MSD	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09
42818-291 TM1-1-808-FL	FID	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	0.144	< 0.09	< 0.09	0.0949	< 0.09	0.164	0.323	0.124	0.337	< 0.09	< 0.09
42818-291 TM1-1-808-FL	MSD	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09
42818-298 TM44-1-811-PNA	FID	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	0.184	0.402	< 0.08	0.111	< 0.08	0.122	1.37	< 0.08	< 0.08
42818-298 TM44-1-811-PNA	MSD	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
42818-298 TM44-1-811-FL	FID	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	0.184	< 0.08	0.244	0.399	0.134	0.392	1.09	0.214	0.8	0.118	< 0.08
42818-298 TM44-1-811-FL	MSD	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
42818-313 TM2-Q-813-PNA	FID	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	23.9	< 17	< 17
42818-313 TM2-Q-813-PNA	MSD	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17
42818-313 TM2-Q-813-FL	FID	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	22	< 17	37.4	< 17	< 17
42818-313 TM2-Q-813-FL	MSD	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17	< 17

Water, ppb - all other, ppm

Raw Data Appendices

ABC Study #42818R

Some of the records that appear in this raw data appendix have been provided as photocopies of original records on file at ABC. This has been done by necessity for certain data that are used commonly in several studies at ABC. Such records include compound receipt records, preparation of stock standards, and dilutions.

The following data correction symbols may appear in the raw data section of this report:

C Calculation error
E Entry error
S Spelling error
D Dating error

R Recording error
F Form change
T Transcription error
I Insertion

Observations and/or Remarks Form

Test Material: Fog Oil

Lab Form No. 72

Sample Type: Varies

ABC Laboratories, Inc.
7200 E. ABC Lane
Columbia, MO 65202-8015

ABC Study No.: 42818

Principal

Investigator: Kelly V. Davis

Comments

The following compounds were weighed to four decimal places on an analytical balance, MAT ID# 1714-145A. Each compound was weighed into a separate volumetric flask. A correction for purity was made. The amount weighed, the purity, the final volume, and the solvent used are listed after each compound. The nominal concentration for each standard solution is 1.0 mg/ml.

2-Methylquinoline	(0.1003g, 100%, 100 mL, Iso-Octane)
6-Methylquinoline	(0.1023g, 98%, 100 mL, Iso-Octane)
Biphenyl	(0.1003g, 100%, 100 mL, Diethyl Ether)
2,6-Dimethylnapthalene	(0.1011g, 99%, 100 mL, Iso-Octane)
1,3-Dimethylnapthalene	(0.1043g, 96%, 100 mL, Iso-Octane)
1,2-Dimethylnapthalene	(0.1056g, 95%, 100 mL, Iso-Octane)
2,3,5-Trimethylnapthalene	(0.0511g, 98%, 50.0 mL, Iso-Octane)
Hexadecane	(0.1003g, 100%, 100 mL, Diethyl Ether)
Fluorene	(0.1020g, 98%, 100 mL, Iso-Octane)
4,4'-Dimethylphene	(0.1033g, 97%, 100 mL, Iso-Octane)
1-Methylfluorene	(0.1011g, 99%, 100 mL, Iso-Octane)
Phenanthrene	(0.1002g, 100%, 100 mL, Iso-Octane)
Anthracene	(0.1003g, 100%, 100 mL, Acetone)
2-Methylphenanthrene	(0.1056g, 95%, 100 mL, Iso-Octane)
9-Methylanthracene	(0.1021g, 98%, 100 mL, Iso-Octane)
3,6-Dimethylphenanthrene	(0.0515g, 97%, 50.0 mL, Iso-Octane)
2-Ethylanthracene	(0.1020g, 98%, 100 mL, Iso-Octane)
9,10-Dimethylanthracene	(0.1010g, 99%, 100 mL, Iso-Octane)

Prepared By: Jean Grant

Date: 30 Jan 96

Checked By: Kelly V. Davis

Date: 30 Jan 96

Observations and/or Remarks Form

Test Material: Fog Oil

Lab Form No. 72

Sample Type: Varies

ABC Laboratories, Inc.
7200 E. ABC Lane
Columbia, MO 65202-8015

ABC Study No.: 42818

Principal

Investigator: Kelly V. Davis

Comments

The 50.0 $\mu\text{g/ml}$ standard (std. mix A) was prepared by taking a 5.0 mL aliquot from each of the 1.0 mg/ml standard solutions of the compounds listed below and adding them to a single 100-mL volumetric flask. The 10.0 $\mu\text{g/ml}$ standard (std. mix B) was prepared by taking a 1.0 mL aliquot from each of the 1.0 mg/ml standard solutions of the compounds listed below and adding them to a single 100-mL volumetric flask. The dilution solvent in each flask was Iso-Octane. These standards were stored in a refrigerator.

2-Methyquinoline
6-Methylquinoline
Biphenyl
2,6-Dimethylnapthalene
1,3-Dimethylnapthalene
1,2-Dimethylnapthalene
2,3,5-Trimethylnapthalene
Hexadecane
Fluorene
4,4'-Dimethylbiphenyl
1-Methylfluorene
Phenanthrene
Anthracene
2-Methylphenanthrene
9-Methylanthracene
3,6-Dimethylphenanthrene
2-Ethylanthracene
9,10-Dimethylanthracene

Prepared By: Jeanne Grant

Date: 30 Jan 96

Checked By: Kelly V Davis

Date: 30 Jan 96

PREPARATION OF FINAL WORKING STANDARD SOLUTIONS

Compound(s) Varies

Primary Std. #(s) NA

Solution Number	Parent Solution Number	Conc. of Parent Solution	Aliquot Volume (mL)	Dilution Volume (mL)	Dilution Solvent	Final Conc.
1. <u>C</u>	<u>A</u>	<u>50.0 μg/ml</u>	<u>10.0</u>	<u>100</u>	<u>Iso-octane</u>	<u>5.00 μg/ml</u>
2. <u>D</u>	<u>A</u>	<u>↓</u>	<u>2.00</u>			<u>1.00 μg/ml</u>
3. <u>E</u>	<u>A</u>	<u>↓</u>	<u>1.00</u>			<u>0.50 μg/ml</u>
4. <u>F</u>	<u>B</u>	<u>10.0 μg/ml</u>	<u>1.00</u>		<u>↓</u>	<u>0.10 μg/ml</u> ②
5. <u>G</u>	<u>A</u>	<u>50.0 μg/ml</u>	<u>20.0</u>		<u>Acetone</u>	<u>10.0 μg/ml</u> ②
6. <u>H</u>	<u>A</u>	<u>↓</u>	<u>2.00</u>			<u>1.00 μg/ml</u> ②
7. <u>I</u>	<u>B</u>	<u>10.0 μg/ml</u>	<u>1.00</u>	<u>↓</u>		<u>0.10 μg/ml</u> ②
8. _____	_____	_____	_____	_____	_____	_____
9. _____	_____	_____	_____	_____	_____	_____
10. _____	_____	_____	_____	_____	_____	_____

② This dilution was added on 31 Aug 95, the expiration date is still 28 Aug 96. JCG 31 Aug 95

Comments: ① JCG 30 Aug 95

Dilutions by: Jeanne Grant Date: 22.30 Aug 95 Dilution Solvent: Iso-octane Lot Number: BT 524
 Checked by: Kelly T. Davis Date: 30 Jan 96 Acetone Storage Condition/and Location: Refrigerate MATID: 1625-635 BK 896
 Approved by: Kelly T. Davis Date: 30 Jan 96 Expiration: 8/28/96

ABC Laboratories, Inc.

PREPARATION OF CONCENTRATED STOCK STANDARDS

No.: 16198 Compound: Hexachloroethane

Primary Standard No.: N/A Lot No.: 06203HF Purity: 99%⁽²⁾

Final Gross Wt.: 65.2917 g Dilution Volume: 100 ml

Tare Wt.: 65.18700 g Dilution Solvent: i-octane

Net Wt.: 0.1217 g Concentration: 1.20 mg/ml

Adj. Net Wt.: 180 mg

Balance Check

Material I.D. No.: 1714-145A

Class S. Weight Added	Before Standard Weighing	After Standard Weighing
<u>100</u> g	<u>100.0015</u> g	<u>100.0014</u> g
<u>100</u> g + <u>0.1</u> g	<u>100.1016</u> g	<u>100.1014</u> g
<u>2</u> g	<u>2.0000</u> g	<u>1.9999</u> g
<u>0.1</u> g	<u>0.1001</u> g	<u>0.0999</u> g

Solution Information

THIS IS AN EXACT COPY OF
THE ORIGINAL DOCUMENT

Expiration Date: 8-21-96

Storage Instructions: 0-6°C

Storage Unit Material Control Number:

BY Joann Brant

Comments: (1) (7) KJ 8-21-95 (2) Three significant figures are used in calculations

even though only 2 are given for purity. KJ 8-21-95

(3) (1) 1-30-96

Prepared by: Kelly R. Davis

Date: 8-21-95

Checked by: Joann Brant

Date: 30 Jan 96

Lab Form No.: 164a (04/07/94)

PREPARATION OF FINAL WORKING STANDARD SOLUTIONS

Compound(s) <u>Hexachloroethane</u>		Primary Std. #s) <u>N/A</u>				
<u>Solution Number</u>	<u>Parent Solution Number</u>	<u>Conc. of Parent Solution</u>	<u>Aliquot Volume (mL)</u>	<u>Dilution Volume (mL)</u>	<u>Dilution Solvent</u>	<u>Final Conc.</u>
1. <u>16198</u> "A"	<u>16198</u>	<u>1,200 µg/mL</u>	<u>83.0</u>	<u>100</u>	<u>i-octane</u>	<u>1000 µg/mL</u>
2. "B"	"A"	<u>1000</u>	<u>1.00</u>			<u>10.0 µg/mL</u>
3. "C"	"B"	<u>10.0</u>	<u>1.00</u>			<u>0.100 µg/mL</u>
4. "D"	↓	↓	<u>0.500</u>			<u>0.0500 µg/mL</u>
5. "E"	"C"	<u>0.100</u>	<u>10.0</u>	↓	↓	<u>0.0100 µg/mL</u>
6.						
7.						
8.						
9.						
10.						
11.						
12.						

Comments:

Dilution Solvent i-octane Lot Number BI 524

Dilutions by: Kelly V. Davis Date: 21 Aug 95 Storage Condition/and Location: 0-6°C
 Checked by: James Brent Date: 30 Jan 96
 Approved by: Kelly V. Davis Date: 30 Jan 96 Expiration: 8/31/96

PREPARATION OF FINAL WORKING STANDARD SOLUTIONS

Compound(s) Hexachloroethane

Primary Std. #(s) NA

Solution Number	Parent Solution Number	Conc. of Parent Solution	Aliquot Volume (mL)	Dilution Volume (mL)	Dilution Solvent	Final Conc.
1. 16198 "F"	"B"	10.0 $\mu\text{g}/\text{ml}$	5.00	100	Acetone	0.500 $\mu\text{g}/\text{ml}$
2. "G"			1.00			0.100 $\mu\text{g}/\text{ml}$
3. "H"			0.100			0.010 $\mu\text{g}/\text{ml}$
4.						
5. 16198 "I"	"C"	0.100 $\mu\text{g}/\text{ml}$	5.00	100	Iso Octane	0.005 $\mu\text{g}/\text{ml}$
6. "J"	"B"	10.0 $\mu\text{g}/\text{ml}$	0.200 ⑤			0.020 $\mu\text{g}/\text{ml}$
7. "K"	"I"	0.005 $\mu\text{g}/\text{ml}$	10.0			0.0005 $\mu\text{g}/\text{ml}$ ①
8. "L"	"E" ⑤	0.010 $\mu\text{g}/\text{ml}$	10.0			0.001 $\mu\text{g}/\text{ml}$ ⑤
9.						
10.						
11.						
12. ④ ⑤ JG 28 Sep 95						

Comments: ① This dilution was added on 28 Sep 95, the expiration date is still 21 Aug 96. JG 28 Sep 95

Dilutions by: James Grant Date: 13 Sep 95 Lot Number BI 524 BK 896
 Checked by: Kelly V. Davis Date: 30 Jan 96 Storage Condition/and Location: Refrigerate MAT ID: 1625-635
 Approved by: Kelly V. Davis Date: 30 Jan 96 Expiration: 8/21/96

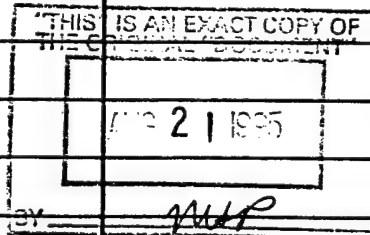
REQUESTED ANALYSES[illegible]

LAB USE ONLY

SAMPLE RECEIPT FORM

Study No.: 42818Client: 30 EnvironmentalAnalysis: fog oilPrincipal Analytical Investigator: Tim Spurgeon Storage Location: B-15-CReceived From: Pan Ag Date/Time of Storage: 10:00 8-10-95Method of Transportation: Fed Ex Date Shipped: 8-9-95 Date Received: 8-10-95

Sample ID	Matrix	Date Sampled	Weight	Comments
TI-1-W TI-W-1	insects	8-8-95	-	samples rect frozen
TI-1-B TI-B-1	insects	8-8-95	-	on dry ice - stored
TI4-B-4	insects	8-8-95	-	B-15-C - TTB 8-10-95
TI4-W	insects	8-8-95	-	
TM4-G site 4-2	bat feces	8-8-95	-	
4-3 midnet	insects	8-8-95	-	
TM1-1	bat	8-8-95	-	
W= white	light			
B				

Prepared by: Timothy A. BurksDate: 8-10-95Checked by: Deborah KuenDate: 8-21-95Approved by: Martha PezoldDate: 8-21-95

REQUESTED ANALYSES

[illegible]

PLEASE CALL THE NUMBERS LISTED ABOVE FOR COMMENTS, QUESTIONS AND STATISTICS. IF YOU HAVE ANY COMMENTS, QUESTIONS, OR TROUBLE,

SAMPLE RECEIPT FORM

Study No.: 42818

Client: 30 Environmental

Analysis: fcg oil

Principal Analytical Investigator: Tim Spurgeon Storage Location: B-15-E

Received From: 30 Environ Mental Date/Time of Storage: 11:00 8-15-95

Method of Transportation: Fed Ex Date Shipped: 8-10-95 Date Received: 8-11-95

[illegible]

Prepared by: Timothy G. Burks

Date: 8-5-85

Checked by: Subra Kera

Date: 8-21-95

Approved by: Martha Good

Date: 8-21-95

REQUESTED ANALYSES

PLEASE CALL THE NUMBERS LISTED ABOVE FOR ASSISTANCE. AND REMEMBER THAT YOU ARE NOT ALONE. A TRIP TO THE

6

SAMPLE RECEIPT FORM

Study No.: 42818

Client: 30 Environmental

Analysis: Fogail

Principal Analytical Investigator: Tim Spurgeon Storage Location: B-15-C

Received From: Angie Ag 30 Environmental Date/Time of Storage: 10:00 8-5-8

Method of Transportation: Fe₂O₃ ex Date Shipped: 8-11-95 Date Received: 8-12-95 ⁽²⁾

Sample ID	Matrix	Date Sampled	Weight	Comments
TI3 - I net ¹	insects	8-10-95	-	Samples stored
TI3-W-1	insects	8-10-95	-	w walk-in ref. 166-R
TI4-W 810	insects	8-10-95	-	upon rec'd - moved
TI4-810 net 2	insects	8-10-95	-	to B-11-Aisle 8-14-95
TI4-810 net 3	insects	8-10-95	-	
TI3-B-1	insects	8-10-95	-	
TI4-B 810	insects	8-11-95	-	
TM3-1	bat	8-9-95	-	"THIS IS AN EXACT COPY OF THE ORIGINAL DOCUMENT"
TM3-2	bat	8-10-95	-	AUG 21 1995
TM4-810-1	bat	8-10-95	-	
				BY MAP
				B samples rec'd 8-22-95 in Aquatics - moved to sample prep 8-14-95-TTB 8-8-95
				O E TTB 8-15-95

Prepared by: Timothy A. Burks

Date: 8-15-95

Checked by: Deborah Kess

Date: 8-21-95

Approved by: Martha Szold
Form #ACFS-22 (07/20/95)

Date: 8-21-95

[illegible]

ABC 42818R PG 00038

SAMPLE RECEIPT FORM

Study No.: 42818Client: 30 EnvironmentalAnalysis: fog oilPrincipal Analytical Investigator: Tim Spurgeon Storage Location: B-15-CReceived From: 30 Environmental Date/Time of Storage: 11:00 8-15-95Method of Transportation: Fed Ex Date Shipped: 8-14-95 Date Received: 8-15-95

Sample ID	Matrix	Date Sampled	Weight	Comments
TI2-1 (net)	insects	8-12-95	-	samples rec'd cold
TI2-B-1	insects	8-12-95	-	on wet ice - some
TI2-W-1		8-12-95	-	water in sample
TI2-W-2		8-13-95	-	jars
TI3-2		8-11-95	-	
TI3-B-2		8-11-95	-	
TI3-W-2		8-11-95	-	
TI2-B-2		8-13-95	-	
TI4-B 812	insects	8-14-95	-	<div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>THIS IS AN EXACT COPY OF THE ORIGINAL DOCUMENT</p> <p>21005</p> <p>MAP</p> </div>
TI4-B 813		8-13-95	-	
TI4-W 812		8-13-95	-	
TI4-W 813		8-14-95	-	
TI4-Net4-811		8-11-95	-	
TI4-Net5-811		8-11-95	-	
TI5-Net-812		8-13-95	-	
				① TT B 8-15-95

Prepared by: Timothy G. BurksDate: 8-15-95Checked by: AlorichienDate: 8-21-95Approved by: Martha PerezDate: 8-21-95

SAMPLE RECEIPT FORM

Study No.: 42818
 Client: 30 Environmental
 Analysis: log oil
 Principal Analytical Investigator: Tia Spurgeon Storage Location: 8-15-C
 Received From: 30 Environmental Date/Time of Storage: 11:00 8-15-95
 Method of Transportation: Fed Ex Date Shipped: 8-14-95 Date Received: 8-15-95

Sample ID	Matrix	Date Sampled	Weight	Comments
TM2-1	bat	8-12-95	-	samples rec'd cold
TM2-1	bat	8-13-95	-	on wet ice - some
TM2-2	bat	8-12-95	-	water in sample
TM2-3	bat	8-12-95	-	jars
TM2-4	bat	8-12-95	-	
TM2-11	bat	8-12-95	-	
TM2-G-3	bat feces	8-13-95	-	
TM2-G-4	bat feces	8-13-95	-	
TM2-G-7	bat feces	8-12-95	-	
TM2-G-8	bat feces	8-12-95	-	
TM2-G-9	bat feces	8-12-95	-	
TM2-G-14	bat feces	8-12-95	-	
TM2-G-15	bat feces	8-12-95	-	
TM3-6	bat	8-11-95	-	
TM4-1-812	bat	8-12-95	-	
TM4-1-813	bat	8-13-95	-	

Prepared by: Timothy L. BurksDate: 8-15-95Checked by: Deborah KeesDate: 8-21-95Approved by: Martha FitzgeraldDate: 8-21-95

Client: 30 Environmental

Analysis: fog oil

Principal Analytical Investigator: Tim Spurgeon Storage Location: B-15-C

Received From: 30 Environmental Date/Time of Storage: 11:00 8-15-95

Method of Transportation: Fed Ex Date Shipped: 8-14-95 Date Received: 8-15-95

EXACT COPY OF
THE ORIGINAL DOCUMENT
AUG 21 1995
NWP

Prepared by: Timothy A. Burks

Date: 8-15-95

Checked by: Deborah Kern

Date: 8-21-75

Approved by: Martha Pasold

Date: 8-21-95

REQUESTED ANALYSES

PLEASE CALL THE NUMBERS LISTED ABOVE FOR COMMENTS, QUESTIONS, AND QUOTATIONS. THANK YOU FOR YOUR CONTINUED PATRONAGE.

P6 00042

SAMPLE RECEIPT FORM

Study No.: 42818

Client: 3D/Environmental

Analysis: Fog Oil

Principal Analytical Investigator: Kelly Davis Storage Location: D

Received From: 30/Environmental Date/Time of Storage: 1/23
Aug 95 12:30pm

Method of Transportation: Fed Ex Date Shipped: 16 Aug 95 Date Received: 17 Aug 95

Sample ID	Matrix	Date Sampled	Weight	Comments
SW2-1	Water	15 Aug 95	NIA	Cold on intake
SW2-dup1	water	15 Aug 95		
SW2-2	Water	15 Aug 95		
SW2-3	Water	15 Aug 95		
SW2-4	Water	15 Aug 95		
SW2-5	water	15 Aug 95		
SW2-6	Water	15 Aug 95		
SW2-7	Water	15 Aug 95		
SW2-8	Water	15 Aug 95		
SW2-9	Water	15 Aug 95		
SW2-10	Water	15 Aug 95		Broken
				Stored

(1) ENH 18 AUG 95 (2) DMAPR 21-95

Prepared by: Martha Perold 0

Date: 18 Aug 95

Checked by: Gornie Ballman

Date: 21 Aug 95

Approved by: Martha Perez

Date: 21 Aug 98

RUSH JOB

REPORT INFORMATION

REQUESTED ANALYSES

Customer Name:	3D/ENVIRONMENTAL	Report Attention:	Angela Schmidt					
Address:	781 Neeb Road	Project, P.O. #:	0777322					
City, State, Zip:	Cumming, GA 30041	Project Name:	TPH-GAS/TEX					
Phone:	513) 922-8199	Project Manager:	TPH-DIESEL					
Fax #:	513) 922-9150	Copy To:	Angela Schmidt					
Lab Sample I.D. #	Date	Time	Sampler:	Sampled	Client Sample Description	Location/Depth	Sample Type S-Soil, L-Liquid O-Other	No. of Containers
	8/14/95	1730			fish	SILC 4	fish	1
	8/15/95	1330			fish	SILC 2	fish	10
	8/12/95	1712			fish	SILC 3	fish	5

Customer Name:	3D/ENVIRONMENTAL	Report Attention:	Angela Schmidt					
Address:	781 Neeb Road	Project, P.O. #:	0777322					
City, State, Zip:	Cumming, GA 30041	Project Name:	TPH-GAS/TEX					
Phone:	513) 922-8199	Project Manager:	TPH-DIESEL					
Fax #:	513) 922-9150	Copy To:	Angela Schmidt					
Lab Sample I.D. #	Date	Time	Sampler:	Sampled	Client Sample Description	Location/Depth	Sample Type S-Soil, L-Liquid O-Other	No. of Containers
	8/14/95	1730			fish	SILC 4	fish	1
	8/15/95	1330			fish	SILC 2	fish	10
	8/12/95	1712			fish	SILC 3	fish	5

Turnaround Time:	Standard Turnaround (10 Working Days)	(TPH, LUFT Samples - 5 Days)	Rush 5 Day	Rush 3 Day	Rush 2 Day	Rush 1 Day

Relinquished By:	Angela Schmidt	Signature	Date	Time	Printed Name	Company Name
Received By: <td>Martha Fitzgerald<td></td><td>11/08/95<td>10:30 am<td>Angela Schmidt<td>3D/ENVIRONMENTAL</td></td></td></td></td>	Martha Fitzgerald <td></td> <td>11/08/95<td>10:30 am<td>Angela Schmidt<td>3D/ENVIRONMENTAL</td></td></td></td>		11/08/95 <td>10:30 am<td>Angela Schmidt<td>3D/ENVIRONMENTAL</td></td></td>	10:30 am <td>Angela Schmidt<td>3D/ENVIRONMENTAL</td></td>	Angela Schmidt <td>3D/ENVIRONMENTAL</td>	3D/ENVIRONMENTAL
Relinquished By: <td></td> <td></td> <td>01/17/96<td>10:00 am<td>Martha Fitzgerald<td>ABC Labs</td></td></td></td>			01/17/96 <td>10:00 am<td>Martha Fitzgerald<td>ABC Labs</td></td></td>	10:00 am <td>Martha Fitzgerald<td>ABC Labs</td></td>	Martha Fitzgerald <td>ABC Labs</td>	ABC Labs
Received By: <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>						
Relinquished By: <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>						
Received By: <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>						

Customer Name:	3D/ENVIRONMENTAL	Report Attention:	Angela Schmidt					
Address:	781 Neeb Road	Project, P.O. #:	0777322					
City, State, Zip:	Cumming, GA 30041	Project Name:	TPH-GAS/TEX					
Phone:	513) 922-8199	Project Manager:	TPH-DIESEL					
Fax #:	513) 922-9150	Copy To:	Angela Schmidt					
Lab Sample I.D. #	Date	Time	Sampler:	Sampled	Client Sample Description	Location/Depth	Sample Type S-Soil, L-Liquid O-Other	No. of Containers
	8/14/95	1730			fish	SILC 4	fish	1
	8/15/95	1330			fish	SILC 2	fish	10
	8/12/95	1712			fish	SILC 3	fish	5

Customer Name:	3D/ENVIRONMENTAL	Report Attention:	Angela Schmidt					
Address:	781 Neeb Road	Project, P.O. #:	0777322					
City, State, Zip:	Cumming, GA 30041	Project Name:	TPH-GAS/TEX					
Phone:	513) 922-8199	Project Manager:	TPH-DIESEL					
Fax #:	513) 922-9150	Copy To:	Angela Schmidt					
Lab Sample I.D. #	Date	Time	Sampler:	Sampled	Client Sample Description	Location/Depth	Sample Type S-Soil, L-Liquid O-Other	No. of Containers
	8/14/95	1730			fish	SILC 4	fish	1
	8/15/95	1330			fish	SILC 2	fish	10
	8/12/95	1712			fish	SILC 3	fish	5

Customer Name:	3D/ENVIRONMENTAL	Report Attention:	Angela Schmidt					
Address:	781 Neeb Road	Project, P.O. #:	0777322					
City, State, Zip:	Cumming, GA 30041	Project Name:	TPH-GAS/TEX					
Phone:	513) 922-8199	Project Manager:	TPH-DIESEL					
Fax #:	513) 922-9150	Copy To:	Angela Schmidt					
Lab Sample I.D. #	Date	Time	Sampler:	Sampled	Client Sample Description	Location/Depth	Sample Type S-Soil, L-Liquid O-Other	No. of Containers
	8/14/95	1730			fish	SILC 4	fish	1
	8/15/95	1330			fish	SILC 2	fish	10
	8/12/95	1712			fish	SILC 3	fish	5

Customer Name:	3D/ENVIRONMENTAL	Report Attention:	Angela Schmidt					
Address:	781 Neeb Road	Project, P.O. #:	0777322					
City, State, Zip:	Cumming, GA 30041	Project Name:	TPH-GAS/TEX					
Phone:	513) 922-8199	Project Manager:	TPH-DIESEL					
Fax #:	513) 922-9150	Copy To:	Angela Schmidt					
Lab Sample I.D. #	Date	Time	Sampler:	Sampled	Client Sample Description	Location/Depth	Sample Type S-Soil, L-Liquid O-Other	No. of Containers
	8/14/95	1730			fish	SILC 4	fish	1
	8/15/95	1330			fish	SILC 2	fish	10
	8/12/95	1712			fish	SILC 3	fish	5

Customer Name:	3D/ENVIRONMENTAL	Report Attention:	Angela Schmidt					
Address:	781 Neeb Road	Project, P.O. #:	0777322					
City, State, Zip:	Cumming, GA 30041	Project Name:	TPH-GAS/TEX					
Phone:	513) 922-8199	Project Manager:	TPH-DIESEL					
Fax #:	513) 922-9150	Copy To:	Angela Schmidt					
Lab Sample I.D. #	Date	Time	Sampler:	Sampled	Client Sample Description	Location/Depth	Sample Type S-Soil, L-Liquid O-Other	No. of Containers
	8/14/95	1730			fish	SILC 4	fish	1
	8/15/95	1330			fish	SILC 2	fish	10
	8/12/95	1712			fish	SILC 3	fish	5

Customer Name:	3D/ENVIRONMENTAL	Report Attention:	Angela Schmidt
Address:	781 Neeb Road	Project, P.O. #:	0777322
City, State, Zip:			

PLEASE CALL THE NUMBERS LISTED ABOVE FOR COMMENTS, QUESTIONS, AND QUOTATIONS. THANK YOU FOR YOUR CONTINUED PATRONAGE.

SAMPLE RECEIPT FORM

Study No.: 42818Client: 3D/EnvironmentalAnalysis: Fog OilPrincipal Analytical Investigator: Kelly DavisStorage Location: B-13-IReceived From: 3D/EnvironmentalDate/Time of Storage: 18 Aug 95
8:42:35 PMMethod of Transportation: Fed ExDate Shipped: 16 Aug 95 Date Received: 17 Aug 95

Sample ID	① Matrix	Date Sampled	Weight	Comments
TF 3-2	#7 1712 fish	15 Aug 95	N/A	Rec'd Ambient
TF 3-3	1712 fish	15 Aug 95	N/A	No In.
TF 3-4	1712 fish	15 Aug 95		Stored B-airls
TF 3-5	1712 fish	15 Aug 95		upon receipt.
TF 3-1	1712 fish	15 Aug 95		
TF 2-1	1330 fish	15 Aug 95		
TF 2-2	1330 fish	15 Aug 95		
TF 2-3	1330 fish	15 Aug 95		
TF 2-4	1330 fish	15 Aug 95		
TF 2-5	1330 fish	15 Aug 95		
TF 2-6	1330 fish	15 Aug 95		
TF 4-1	fish 1730	14 Aug 95		
TF 2-1	fish	15 Aug 95	↓	MAP

Prepared by: MAP 18 Aug 95
Martha PerezDate: 18 Aug 95Checked by: Deborah KenDate: 21 Aug 95Approved by: Martha PerezDate: 21 Aug 95

REQUESTED ANALYSES

[illegible]

PLEASE CALL THE NUMBERS LISTED ABOVE FOR COMMENTS, QUESTIONS AND QUOTATIONS. THANK YOU FOR YOUR CONTINUED PATRONAGE.

SAMPLE RECEIPT FORM

Study No.: 42818Client: 3D EnvironmentalAnalysis: Log OilPrincipal Analytical Investigator: Kelly JonesStorage Location: Leaves B-13-1
Sediment Refug. D.C.Received From: 3D EnvironmentalDate/Time of Storage: 8-18-95 4:00 pmMethod of Transportation: Fed Ex Date Shipped: 16 Aug 95 Date Received: 17 Aug 95

Sample ID	Matrix	Date Sampled	Weight	Comments
TV 2-1	Bark & Leaves	15 Aug 95	N/A	Rec'd on wet ice
TV 2-2	Bark & Leaves	15 Aug 95		Stored B-aisles
TV 2-3	Bark & Leaves	15 Aug 95		upon receipt
TV 3-1	Bark & Leaves	15 Aug 95		
TV 3-2	Bark & Leaves	15 Aug 95		
TV 3-3	Bark & Leaves	15 Aug 95		
SD 2-1	Sediment	15 Aug 95		
SD 2-Dup-1	Sediment	15 Aug 95		
SD 2-2	Sediment	15 Aug 95		21 1995
SD 2-3	Sediment	15 Aug 95		MAP
SD 2-4	Sediment	15 Aug 95		
SD 2-5	Sediment	15 Aug 95		
SD 2-6	Sediment	15 Aug 95		
SD 2-7	Sediment	15 Aug 95		
SD 2-8	Sediment	15 Aug 95		
SD 2-9	Sediment	15 Aug 95		
SD 2-10	Sediment	15 Aug 95	V	

Prepared by: Martha Fitzgerald ^{DE} MAP 8-18-95Date: 18 Aug 95Checked by: Deborah KimDate: 21 Aug 95Approved by: Martha FitzgeraldDate: 21 Aug 95

REQUESTED ANALYSES

PLEASE CALL THE NUMBERS LISTED ABOVE FOR COMMENTS, QUESTIONS, AND QUOTATIONS. THANK YOU FOR YOUR CONTINUED PATRONAGE.

SAMPLE RECEIPT FORM

Study No.: 42818Client: 3D EnvironmentalAnalysis: For OilPrincipal Analytical Investigator: Kelly Davis Storage Location: DReceived From: 3D Environmental Date/Time of Storage: 18 Aug 95 ^{12:30 PM}Method of Transportation: Fed Ex Date Shipped: 17 Aug 95 Date Received: 18 Aug 95

Sample ID	Matrix	Date Sampled	Weight	Comments
S41-2	Soil	8/16/95	N/A	Cool in water
S41-Dup-2	Soil	8/16/95		No ice
S43-2	Soil	8/16/95		remaining
S43-3	Soil	8/16/95		
S43-6	Soil	8/16/95		
S81-2	Soil	8/16/95		
S82-2	Soil	8/16/95		
S83-5	Soil	8/16/95		
S41-3	Soil	8/16/95		
SM1-2	Soil	8/16/95		
SM1-4	Soil	8/16/95		21855
SM1-5	Soil	8/16/95		
SM2-2	Soil	8/16/95		MAP
SM3-Dup-1	Soil	8/16/95		
SM3-5	Soil	8/16/95		
SM3-6	Soil	8/16/95		

Prepared by: Martha Tazell ^{Date taken from Fed Ex label}Date: 18 Aug 95Checked by: Deborah W.Date: 21 Aug 95Approved by: Martha TazellDate: 21 Aug 95

Client: 3D/Environmental

Analysis: Fog Oil

Principal Analytical Investigator: Kelly Davis Storage Location: D

Received From: 3D Environmental Date/Time of Storage: 18 Aug 95 12:30 PM

Method of Transportation: Fed Ex Date Shipped: 17 Aug 95 Date Received: 18 Aug 95

21 1995

① Date Taken from Fed Ex label M4 8-18-95

Prepared by: Marsha Puzell

Date: 18 Aug 95

Checked by: Selma Allen

Date: 21 Aug 95

Approved by: Martha Szold

Date: 2/Aug 95

CHAIN-OF-CUSTODY FORM

[illegible]

PLEASE CALL THE NUMBERS LISTED ABOVE FOR COMMENTS, QUESTIONS, AND QUOTATIONS. THANK YOU FOR YOUR CONTINUED PATRONAGE.

SAMPLE RECEIPT FORM

Study No.: 42818

Client: 3D Environmental

Analysis: Fog Oil

Principal Analytical Investigator: Kelley Davies Storage Location: WD ^{B-13-1}

Received From: 3D Environmental Date/Time of Storage: 18 Aug 95 12:30 PM

Method of Transportation: Fed Ex Date Shipped: 17 Aug 95 Date Received: 18 Aug 95

Sample ID	Matrix	Date Sampled	Weight	Comments
SVI-3	longleaf Pine	16/8/95	N/A	Ambient, no in
SVI-2	White Oak	16/8/95	↓	↓
SVI-1	Tulip Poplar	16/8/95	↓	↓
SVI-1	Soil	8/16/95	N/A	Cool, in water
SVI-4	Soil	↓	↓	no in
SVI-5	Soil	↓	↓	↓
SVI-6	Soil	↓	↓	↓
SMI-1	Soil	↓	↓	↓
SMI-3	Soil	↓	↓	↓
SMI-Dup-5	Soil	↓	↓	↓
SMI-6	Soil	↓	↓	21
SMI-3	Soil	↓	↓	map
SVI-3	Soil	↓	↓	↓
SVI-4	Soil	↓	↓	↓
SVI-5	Soil	↓	↓	↓
SVI-6	Soil	↓	↓	↓

Prepared by: Martha Perez ^{DE REP 18 Aug 95} ^{② Taken from Fed 27 Label REP 8-18-95} Date: 18 Aug 95

Checked by: Deborah Kess

Date: 21 June 95

Approved by: Martha Sebold

Date: 2/Aug 95

SAMPLE RECEIPT FORM

Study No.: 42818

Client: 3D / Environmental

Analysis: Fog Oil

Principal Analytical Investigator: Kelly Davis Storage Location: B-13-I

Received From: 3D/Environmental Date/Time of Storage: 18 Aug 95 10:30 AM

Method of Transportation: fed ex Date Shipped: 17 Aug 95 Date Received: 18 Aug 95

[illegible]

Prepared by: Marsha Puzell

Date: 18 Aug 95

Checked by: Deborah Kern

Date: 21 Aug 95

Approved by: Martha Szold
 Form #ACES-22 (07/20/95)

Date: 21 Aug 95

REPORT INFORMATION

[illegible][illegible]

SAMPLE RECEIPT FORM

Study No.: 42818Client: 30 EnvironmentalAnalysis: Fog OilPrincipal Analytical Investigator: Kelly Davis Storage Location: B-13-IReceived From: 30 Environmental Date/Time of Storage: 18 Aug 95 12:30 PMMethod of Transportation: Fed Ex Date Shipped: 17 Aug 95 Date Received: 18 Aug 95

Sample ID	Matrix	Date Sampled	Weight	Comments
S42-1	Soil	16 Aug 95	N/A	Ambient - noise
S42-2				
S42-3				
S42-4				
S42-4 dup				
S42-5				
S42-6				
S43-1				
S43-4				
S43-5				
Sm2-1				
Sm2-3				21525
Sm2-4				
Sm2-5				
Sm2-6	↓	↓	↓	

Prepared by: Martha PoyaldDate: 18 Aug 95Checked by: Deborah KernDate: 21 Aug 95Approved by: Martha PoyaldDate: 21 Aug 95

SAMPLE RECEIPT FORM

Study No.: 42818

Client: 3D Environmental

Analysis: Fog Oil

Principal Analytical Investigator: Kelly Davis Storage Location: B-13-I

Received From: 3D\Environmental Date/Time of Storage: 18 Aug 95 12:30 PM

Method of Transportation: Fed Ex Date Shipped: 17 Aug 95 Date Received: 16 Aug 95

[illegible]

Prepared by: Martha Perold

Date: 18 Aug 95

Checked by: Deborah Pao

Date: 21 Aug 95

Approved by: Martha Terold

Date: 21 Aug 95

REQUÊSTED ANALYSES

REPORT INFORMATION

PLEASE CALL THE NUMBERS LISTED ABOVE FOR COMMENTS, QUESTIONS, AND QUOTATIONS. THANK YOU FOR YOUR CONTINUED PATRONAGE.

SAMPLE RECEIPT FORM

Study No.: 42818

Client: 3D Environmental

Analysis: Fog Oil

Principal Analytical Investigator: Kelly Davis

Storage Location: ~~B-13-I~~^D

Received From: 3D/Environmental

Date/Time of Storage: 18 Aug 95 12:30

Method of Transportation: Fed Ex

Date Shipped: 17 Aug 95 Date Received: 18 Aug 95

Date Received: 18 Aug 95

Sample ID	Matrix	Date Sampled	Weight	Comments
SD3-1	Sediment	16/8/95	N/A	Rec'd Coal.
SD3-2				in water, no
SD3-3				ice remaining
SD3-4				
SD3-5				
SD3-7				
SD3-8				
SD3-9				
SD3-10	✓			
SW3-1	Water			
SW3-2				
SW3-3				
SW3-6				
SW3-8	✓	✓	✓	
	(DE) MAF 18 Aug 95			

Prepared by: Martha Jensen

Date: 18 Aug 95

Checked by: Debra Kess

Date: 2 Aug 85

Approved by: Martha Reed

Date: 2/Aug 95

OBSERVATIONS AND/OR REMARKS FORM

Test Material: Fog OilSample Type: WaterABC Study No: 42818Principal Analytical Investigator: Kelly Davis

Rec'd on 18 Aug 95

4 Bottles of water sample - Broken - no water remaining. No label remaining on broken bottles.

Also rec'd 2 Bottles of water with no label.

The following 6 labels were found in the shipping cooler.

SW3-4

SW3-5

SW3-7

SW3-9

SW3-10

SW3-10 Dup

Prepared By: Martha P. FieldDate: 18 Aug 95Checked By: Kelly V. DavisDate: 21 Aug 95Principal Analytical Investigator: Kelly V. DavisDate: 21 Aug 95

OBSERVATIONS AND/OR REMARKS FORM

Test Material: _____

Sample Type: _____

ABC Study No: _____

Principal Analytical Investigator: _____

EAGLE P FICHERENVIRONMENTAL SCIENCE
& TECHNOLOGY DEPT.
200 B.J. TUNNELL BLVD., MIAMI, OK 74354
1-800-331-7425Specially Cleaned
Sample Container

3D/E

EAGLE P FICHERENVIRONMENTAL SCIENCE
& TECHNOLOGY DEPT.
200 B.J. TUNNELL BLVD., MIAMI, OK 74354
1-800-331-7425Specially Cleaned
Sample Container

3D/E

EAGLE P FICHERENVIRONMENTAL SCIENCE
& TECHNOLOGY DEPT.
200 B.J. TUNNELL BLVD., MIAMI, OK 74354
1-800-331-7425Specially Cleaned
Sample Container

3D/E

DATE: 10/8/95 TIME: 1240 COLLECTED BY: ABG

SAMPLING SITE: 29 oil Project

SAMPLE TYPE:

☐ Grab ☐ Composite ☐ Other

PRESERVATIVE

SW3-1

DATE: 10/8/95 TIME: 1250 COLLECTED BY: ABG

SAMPLING SITE: 29 oil Project

SAMPLE TYPE:

☐ Grab ☐ Composite ☐ Other

PRESERVATIVE

SW3-7

DATE: 10/8/95 TIME: 1333 COLLECTED BY: ABG

SAMPLING SITE: 29 oil Project

SAMPLE TYPE:

☐ Grab ☐ Composite ☐ Other

PRESERVATIVE

SW3-7

EAGLE P FICHERENVIRONMENTAL SCIENCE
& TECHNOLOGY DEPT.
200 B.J. TUNNELL BLVD., MIAMI, OK 74354
1-800-331-7425Specially Cleaned
Sample Container

3D/E

CHERENVIRONMENTAL SCIENCE
& TECHNOLOGY DEPT.
200 B.J. TUNNELL BLVD., MIAMI, OK 74354
1-800-331-7425Specially Cleaned
Sample Container

Lot #:

EAGLE P FICHERENVIRONMENTAL SCIENCE
& TECHNOLOGY DEPT.
200 B.J. TUNNELL BLVD., MIAMI, OK 74354
1-800-331-7425Specially Cleaned
Sample Container

Lot #:

DATE: 10/8/95 TIME: 1402 COLLECTED BY: ABG

SAMPLING SITE: 29 oil Project

SAMPLE TYPE:

☐ Grab ☐ Composite ☐ Other

PRESERVATIVE

SW3-9

DATE: 10/8/95 TIME: 1419 COLLECTED BY: ABG

SAMPLING SITE: Site 3

SAMPLE TYPE:

☐ Grab ☐ Composite ☐ Other

PRESERVATIVE

SW3-10
352193

DATE: 10/8/95 TIME: 1425 COLLECTED BY: ABG

SAMPLING SITE: Site 3

SAMPLE TYPE:

☐ Grab ☐ Composite ☐ Other

PRESERVATIVE

SW3-dup-10

PRESERVATIVE

Prepared By: _____

Date: _____

Checked By: DeLoach Kern

Date: 21/10/2008

Principal Analytical
Investigator: _____

Date: _____

CHAIN-OF-CUSTODY FORM

RUSH JOB		CUSTOMER INFORMATION		REPORT INFORMATION		REQUESTED ANALYSES	
ABC/Pan-Ag Labs Job #:		Customer Name:	3D/Environmental	Report Attention:	Angela Schmidt	TPH-GAS/TEX	
Date Entered on LIMS:		Address:	781 Neeb Road	Project, P.O. #:	07782219	TPH-DIESEL	
		City, State, Zip:	Cincinnati OH 45238	Project Name:	Fog DIO		
		Phone:	(513) 8922-8199	Project Manager:			
		Fax #:		Copy To:	Angela Schmidt		
		Date	Time	Sampler:	Sample Type	No. of Containers	
		Sampled	Sampled	Client Sample Description	8.5m L-Liquid		
		17/8/95		Surface water	0 - Other	11	
		17/8/95		Vegetation		3	
<p>LAB USE ONLY</p> <p>Transpound Time: <input checked="" type="checkbox"/> Standard Turnaround (10 Working Days) (TPH, LUFT Samples - 5 Days) <input type="checkbox"/> Rush 5 Day <input type="checkbox"/> Rush 3 Day <input type="checkbox"/> Rush 2 Day <input type="checkbox"/> Rush 1 Day</p>				<p>Comments:</p> <p>Samples rec'd ambient; 2 bottles full off of the samples because of the bottles heated in cooler. They were put in the samples they were thought to have come off of and marked as unknown with a question mark on the sample - samples stored in walk-in ref. 0</p> <p>8-22-95 4:15 TTD 8-22-95</p>			
				<p>"THIS" IS AN EXACT COPY OF THE ORIGINAL "DOCUMENT"</p> <p>FEB 5 1996</p> <p>BY: Angela Y. Davis</p>			
				<p>ARE SAMPLES:</p> <p>TOXIC? <input checked="" type="checkbox"/> NA FLAMMABLE? <input type="checkbox"/> EXPLOSIVE? <input type="checkbox"/> HIGH LEVELS? <input type="checkbox"/></p> <p>PRESERVATIVE:</p> <p>NaOH <input type="checkbox"/> H2SO4 <input type="checkbox"/> HNO3 <input type="checkbox"/> HCl <input type="checkbox"/> ASCORBIC ACID <input type="checkbox"/></p>			
				<p>FOR CAN METALS: <input checked="" type="checkbox"/> STL <input type="checkbox"/> TTL</p>			
<p>Relinquished By: <u>AMY GEBEL</u></p> <p>Received By: <u>Timothy T. Burks</u></p> <p>Relinquished By:</p> <p>Received By:</p> <p>Received for Laboratory By:</p>		<p>Signature</p> <p>17/8/95 10:00 am</p> <p>8-22-95 10:00 am</p> <p>8-22-95 10:00 am</p> <p>8-22-95 10:00 am</p>		<p>Printed Name</p> <p>AMY GEBEL</p> <p>Timothy T. Burks</p> <p>Company Name</p> <p>ABC Labs</p>		<p>Requested Analyses</p> <p>TPH-GAS/TEX</p> <p>TPH-DIESEL</p>	

SAMPLE RECEIPT FORM

Study No.: 428218
 Client: 30 / Environmental
 Analysis: Fog Oil
 Principal Analytical Investigator: Tim Spurgeon Storage Location: D
 Received From: 30 Environmental Date/Time of Storage: 3:55 8-22-95
 Method of Transportation: fed Ex Date Shipped: 8-18-95 Date Received: 8-22-95

Sample ID	Matrix	Date Sampled	Weight	Comments
SV4-1	Leaves / bark	8-17-95	-	samples rec'd
SV4-2	Leaves / bark	8-17-95	-	ambient. TT8
SV4-3	Leaves / bark	8-17-95	-	8-22-95
SW4-1	Water	8-17-95	-	
SW4-3	Water	8-17-95	-	
SW4-4	Water	8-17-95	-	<div> <p>"THIS" IS AN EXACT COPY OF THE ORIGINAL "DOCUMENT"</p> <p>AUG 24 1995</p> <p>MAP</p> </div>
SW4-5	Water	8-17-95	-	
SW4-6	Water	8-17-95	-	
SW4-7	Water	8-17-95	-	
SW4-dup-7	Water	8-17-95	-	
SW4-8	Water	8-17-95	-	
SW4-10	Water	8-17-95	-	
-	-	-	-	
SW4-2	Water	8-17-95	-	these sample bottles were lost
SW4-9	Water	8-17-95	-	in the cooler - they were placed in the bottles they are thought to be from and the bottles marked
				TT8 8-22-95 8-22-95

Prepared by: Timothy S. Burks Date: 8-22-95
 Checked by: Martha Pizal Date: 8-23-95
 Approved by: Martha Pizal Date: 8-23-95

SAMPLE RECEIPT FORM

Study No.: 42818Client: 3D/EnvironmentalAnalysis: Fog OilPrincipal Analytical Investigator: Kelly Davis Storage Location: B-13-IReceived From: 3D/Environmental Date/Time of Storage: 24 Aug 95 12:30 PMMethod of Transportation: Fed Ex Date Shipped: 18 Aug 95 Date Received: 22 Aug 95

Sample ID	Matrix	Date Sampled	Weight	Comments
SU4-1	Soil	8-17-95	N/A	Rec'd ambient
SU4-2				Stored B-11-aisle
SU4-3				22-Aug-95
SU4-4				
SU4-5				
SU4-6				
SU4-Dup 6	↓	↓	↓	
SM4-1	Soil	8-17-95	N/A	
SM4-2				
SM4-3				
SM4-4				
SM4-5				
SM4-6				
SB4-1				
SB4-2				
SB4-Dup 2	↓	↓	↓	

THIS IS AN EXACT COPY OF THE ORIGINAL "DOCUMENT"

AUG 24 1995

BY: MJP

Prepared by: Martha Pizell Date: 8-24-95

Checked by: Timothy A. Burns Date: 8-24-95

Approved by: Martha Pizell Date: 8-24-95

SAMPLE RECEIPT FORM

Study No.: 42818Client: 3D/EnvironmentalAnalysis: Fog OilPrincipal Analytical Investigator: Kelly DavisStorage Location: So. B-13-I
Sel. = D'refig.Received From: 3D/EnvironmentalDate/Time of Storage: 24 Aug 95 12:30 PMMethod of Transportation: Fed ExDate Shipped: 18 Aug 95Date Received: 22 Aug 95

Sample ID	Matrix	Date Sampled	Weight	Comments
SB4-3	Soil	8-17-95	N/A	Rec'd ambient
SB4-4	↓			Stored B-11-aisle
SB4-5	↓			22 Aug 95
SB4-6	↓			
SD4-1	Sediment			
SD4-2				
SD4-3				
SD4-4				
SD4-5				
SD4-6				
SD4-7				
SD4-dup-7				
SD4-8				
SD4-9				
SD4-10	↓	↓	↓	

THIS IS AN EXACT COPY OF
THE ORIGINAL "DOCUMENT"

AUG 24 1995

BY MAAPPrepared by: Marcia PyzdekDate: 8-24-95Checked by: Timothy A. BurksDate: 8-24-95Approved by: Marcia PyzdekDate: 8-24-95

External Standard Report

Information from Current Data File Header:

File: /chem/msd.i/fog/Fog0301003.d

Operator: Kelly Davis

Date Acquired: Wed Oct 11 95 09:00:15 AM

Sample Name: 10 ug/ml PAH's

Misc Info:

Sequence Index: 1 Bottle Number: 3 Repetition Number: 1

Fog Oil PAH's

Calibration Table Last Updated: Thu Oct 12 09:56:03 1995

Reference Peak Window: 5.000 % of Retention Time

Non-reference Peak Window: 5.000 % of Retention Time

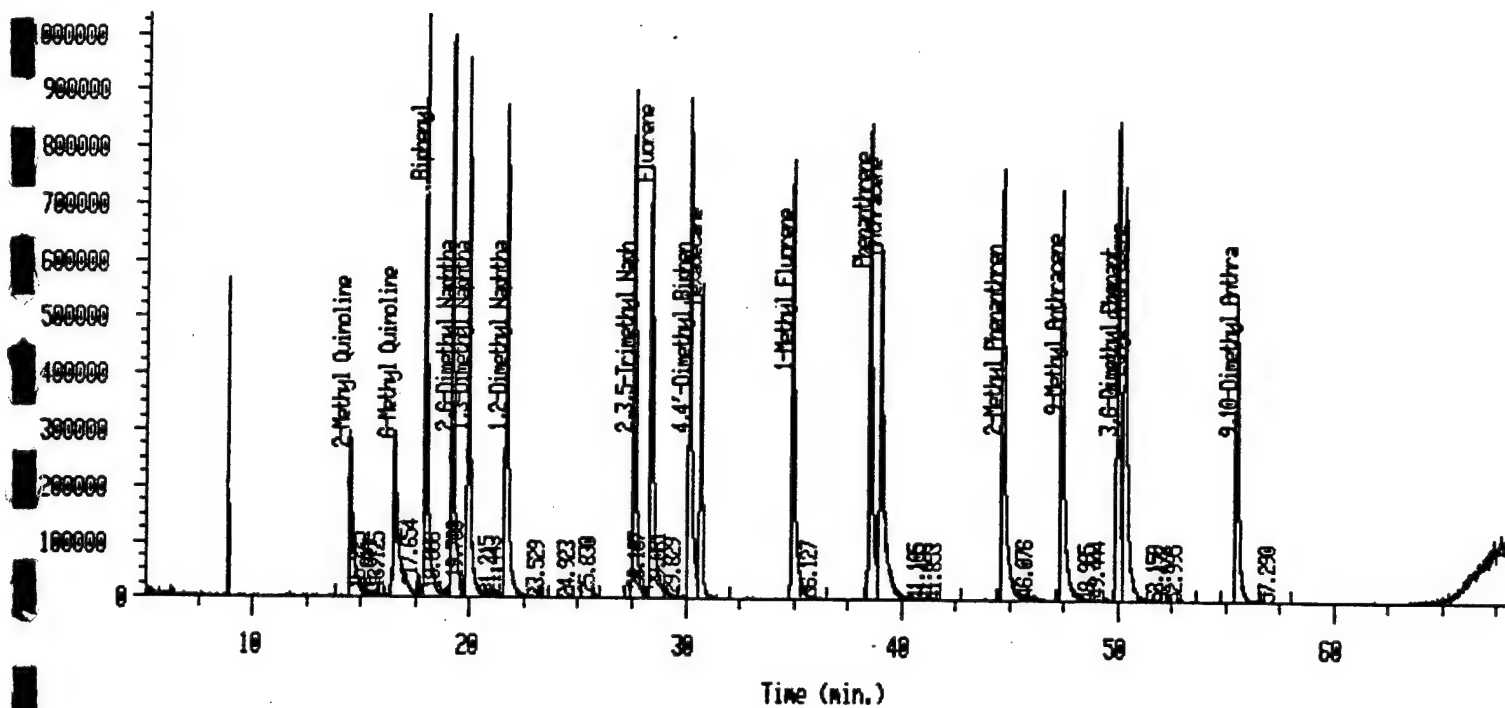
Default Sample Amount: 0

Uncalib. Peak Response Factor: 0

Default Multiplier: 1

Peak Num	Type	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1		BH	14.503	Total Ion	2-Methyl Quinoline	32299709	10.59 ug/mL
2		VH	16.529	Total Ion	6-Methyl Quinoline	43702704	11.03 ug/mL
3		VH	17.933	Total Ion	Biphenyl	81634491	10.08 ug/mL
4		VH	19.155	Total Ion	2,6-Dimethyl Naphtha	79811820	10.09 ug/mL
5		VH	19.903	Total Ion	1,3-Dimethyl Naphtha	83560133	10.17 ug/mL
6		PH	21.653	Total Ion	1,2-Dimethyl Naphtha	81115214	10.20 ug/mL
7		PH	27.562	Total Ion	2,3,5-Trimethyl Naph	86291667	10.18 ug/mL
8		VH	28.358	Total Ion	Fluorene	82887351	10.17 ug/mL
9		VH	30.155	Total Ion	4,4'-Dimethyl Biphen	84248766	10.27 ug/mL
10		VH	30.698	Total Ion	Hexadecane	48899278	10.10 ug/mL
11		BH	34.912	Total Ion	1-Methyl Fluorene	80957983	10.22 ug/mL
12		BH	38.501	Total Ion	Phenanthrene	86582300	10.15 ug/mL
13		VH	39.009	Total Ion	Anthracene	86721254	10.22 ug/mL
14		BH	44.649	Total Ion	2-Methyl Phenanthren	85603102	10.22 ug/mL
15		PH	47.383	Total Ion	9-Methyl Anthracene	79862691	10.15 ug/mL
16		PH	49.971	Total Ion	3,6-Dimethyl Phenant	81253819	10.07 ug/mL
17		VH	50.294	Total Ion	2-Ethyl Anthracene	85406239	10.14 ug/mL
18		PH	55.460	Total Ion	9,10-Dimethyl Anthra	55718891	10.15 ug/mL

Abundance



External Standard Report

Information from Current Data File Header:

File: /chem/msd.i/fog/Fog0401004.d

Operator: Kelly Davis

Date Acquired: Wed Oct 11 95 10:59:58 AM

Sample Name: 5 ug/ml PAH's

Misc Info:

Bottle Number: 4 Repetition Number: 1

Fog Oil PAH's

Calibration Table Last Updated: Thu Oct 12 09:56:03 1995

Reference Peak Window: 5.000 % of Retention Time

Non-reference Peak Window: 5.000 % of Retention Time

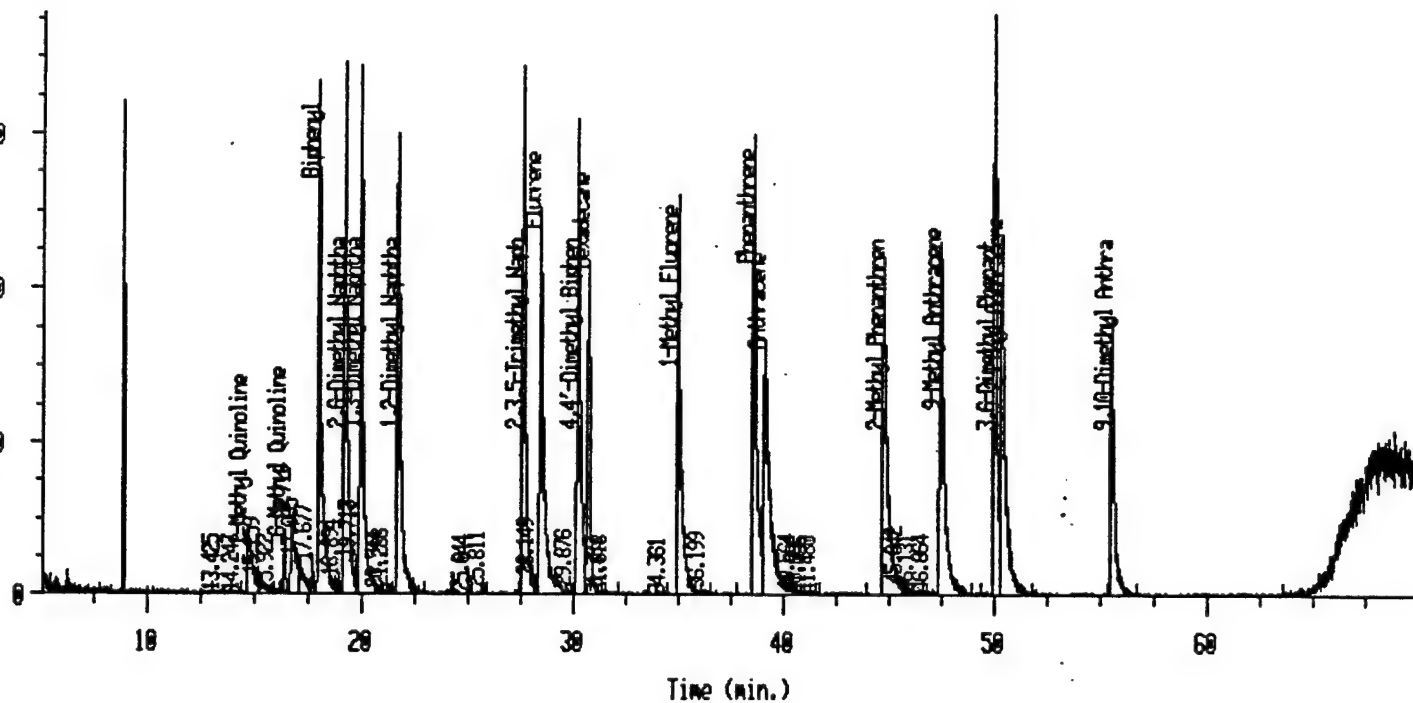
Default Sample Amount: 0

Uncalib. Peak Response Factor: 0

Default Multiplier: 1

Peak Num	Type	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1		PH	14.666	Total Ion	2-Methyl Quinoline	7132669	3.674 ug/mL
2		VH	16.399	Total Ion	6-Methyl Quinoline	2228434	2.685 ug/mL
3		PH	17.953	Total Ion	Biphenyl	34041441	4.825 ug/mL
4		PH	19.169	Total Ion	2,6-Dimethyl Naphtha	32689754	4.787 ug/mL
5		VH	19.907	Total Ion	1,3-Dimethyl Naphtha	34352724	4.615 ug/mL
6		PH	21.664	Total Ion	1,2-Dimethyl Naphtha	31990401	4.545 ug/mL
7		BH	27.566	Total Ion	2,3,5-Trimethyl Naph	34360858	4.585 ug/mL
8		PH	28.387	Total Ion	Fluorene	33669392	4.621 ug/mL
9		PH	30.177	Total Ion	4,4'-Dimethyl Biphen	30018159	4.395 ug/mL
10		VH	30.688	Total Ion	Hexadecane	21447455	4.770 ug/mL
11		PH	34.934	Total Ion	1-Methyl Fluorene	30739918	4.512 ug/mL
12		BH	38.533	Total Ion	Phenanthrene	35127778	4.657 ug/mL
13		VH	39.073	Total Ion	Anthracene	32959879	4.499 ug/mL
14		BH	44.697	Total Ion	2-Methyl Phenanthren	32473390	4.506 ug/mL
15		PH	47.411	Total Ion	9-Methyl Anthracene	32500570	4.669 ug/mL
16		PH	49.965	Total Ion	3,6-Dimethyl Phenant	35366296	4.840 ug/mL
17		VH	50.306	Total Ion	2-Ethyl Anthracene	34740062	4.675 ug/mL
18		BH	55.482	Total Ion	9,10-Dimethyl Anthra	22319242	4.669 ug/mL

Abundance



External Standard Report

Information from Current Data File Header:

File: /chem/msd.i/fog/Fog0501005.d

Operator: Kelly Davis

Date Acquired: Wed Oct 11 95 12:52:50 PM

Sample Name: 1 ug/ml PAH's

Misc Info:

Bottle Number: 5 Repetition Number: 1

Fog Oil PAH's

Calibration Table Last Updated: Thu Oct 12 09:56:03 1995

Reference Peak Window: 5.000 % of Retention Time

Non-reference Peak Window: 5.000 % of Retention Time

Default Sample Amount: 0

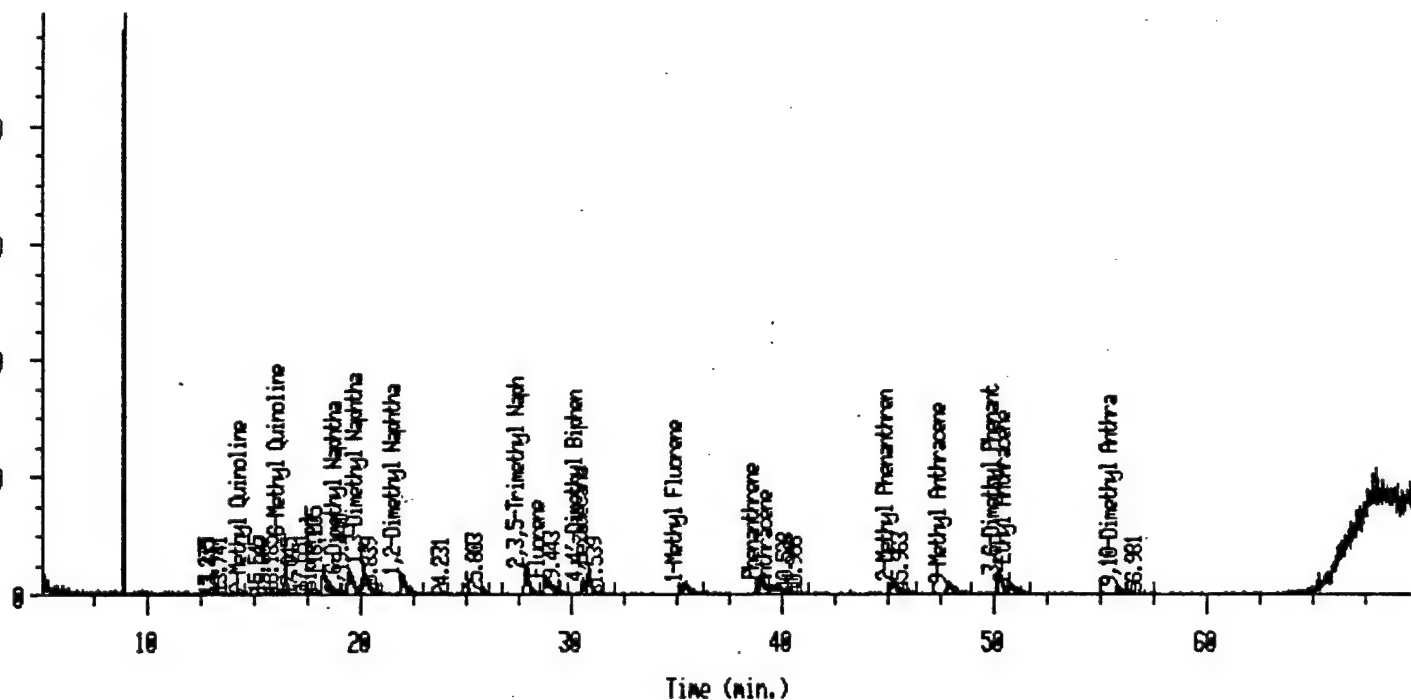
Uncalib. Peak Response Factor: 0

Default Multiplier: 1

Peak Num	Type	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1		PH	14.648	Total Ion	2-Methyl Quinoline	79877	1.736 ug/mL
2		PH	16.423	Total Ion	6-Methyl Quinoline	2428893	2.726 ug/mL
3		PH	17.923	Total Ion	Biphenyl	271208	1.097 ug/mL
4		PH	19.132	Total Ion	2,6-Dimethyl Naphtha	119667	1.118 ug/mL
5		VH	20.105	Total Ion	1,3-Dimethyl Naphtha	4233878	1.214 ug/mL
6		PH	21.878	Total Ion	1,2-Dimethyl Naphtha	3400642	1.253 ug/mL
7		BH	27.761	Total Ion	2,3,5-Trimethyl Naph	3243393	1.230 ug/mL
8		PH	28.757	Total Ion	Fluorene	3414317	1.211 ug/mL
9		PH	30.504	Total Ion	4,4'-Dimethyl Biphen	1766883	1.336 ug/mL
10		VH	30.797	Total Ion	Hexadecane	2702024	1.128 ug/mL
11		BH	35.269	Total Ion	1-Methyl Fluorene	2214320	1.271 ug/mL
12		BH	38.960	Total Ion	Phenanthrene	2665997	1.190 ug/mL
13		VH	39.541	Total Ion	Anthracene	2713257	1.278 ug/mL
14		BH	45.263	Total Ion	2-Methyl Phenanthren	2414277	1.274 ug/mL
15		BH	47.784	Total Ion	9-Methyl Anthracene	2360146	1.184 ug/mL
16		BH	50.236	Total Ion	3,6-Dimethyl Phenant	2471896	1.089 ug/mL
17		VH	50.786	Total Ion	2-Ethyl Anthracene	2373281	1.181 ug/mL
18		BH	55.820	Total Ion	9,10-Dimethyl Anthra	1076171	1.184 ug/mL

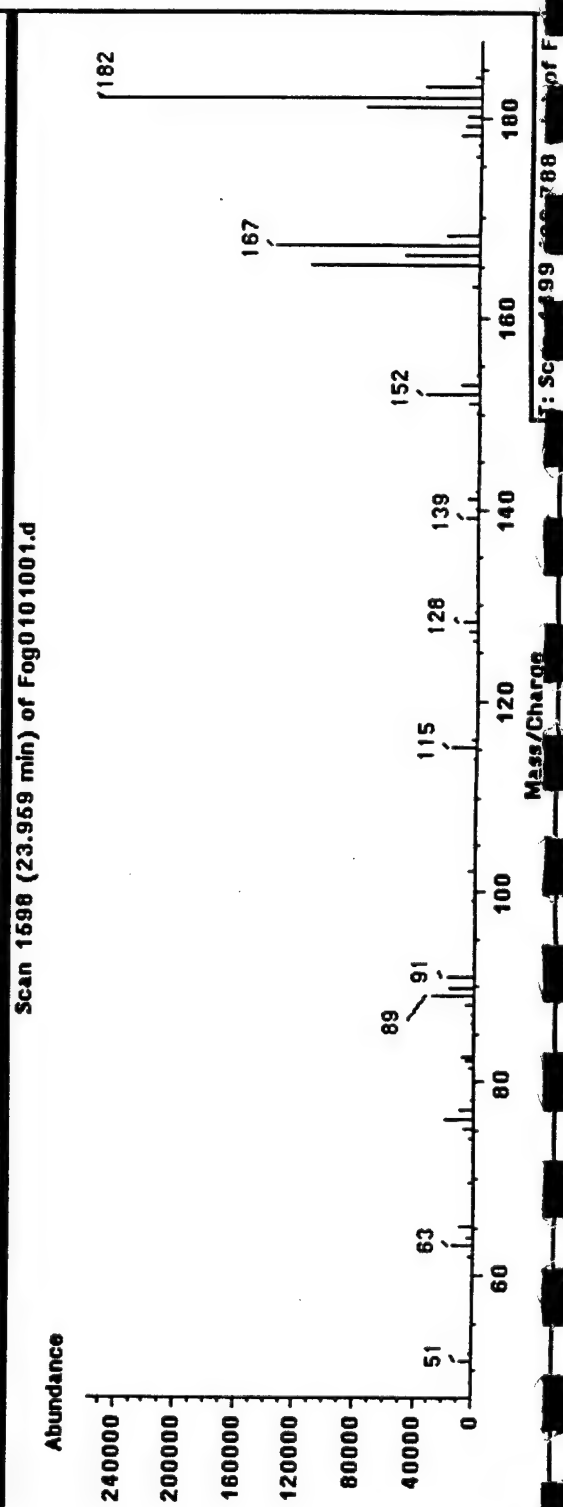
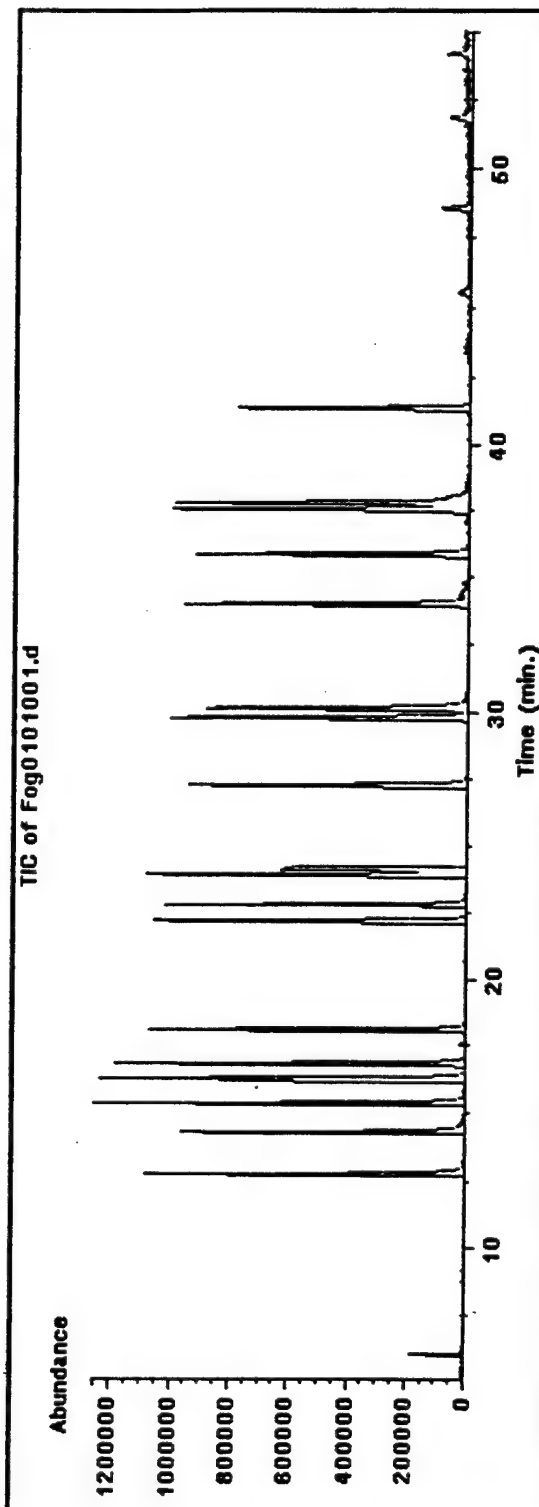
TIC of Fog0501005.d

Abundance

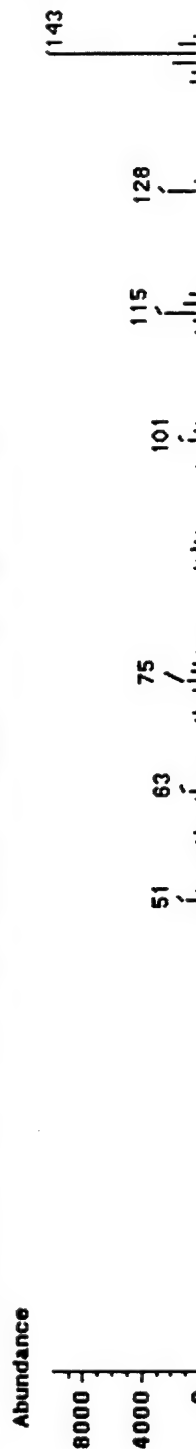


10 µg/L
PAH's

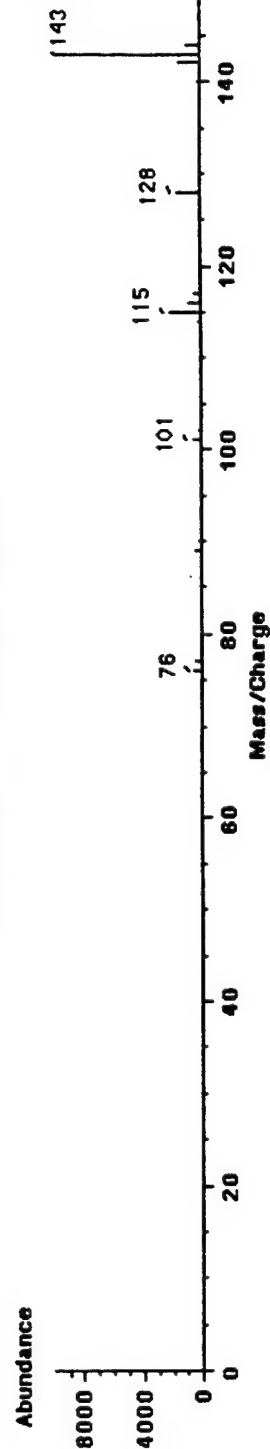
50% 1 min
30% min to 80
3% min to 260
20% min to 300
hold 6 min



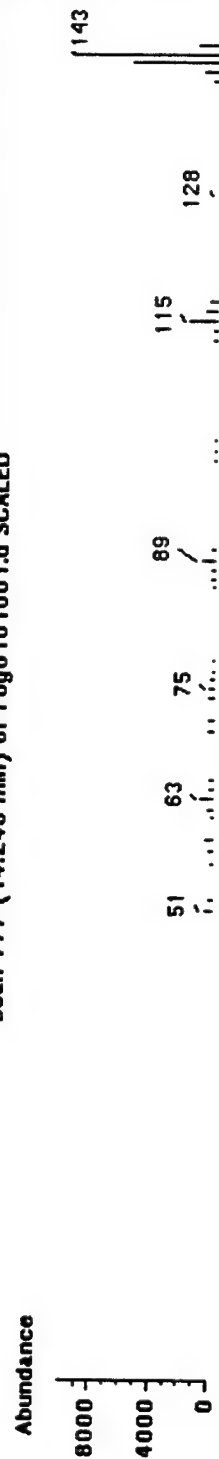
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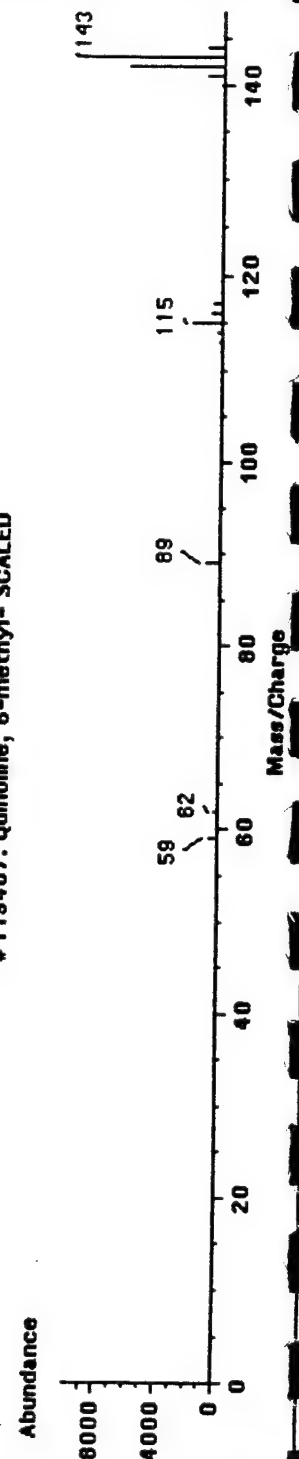
#119399: Quinoline, 2-methyl- SCALED



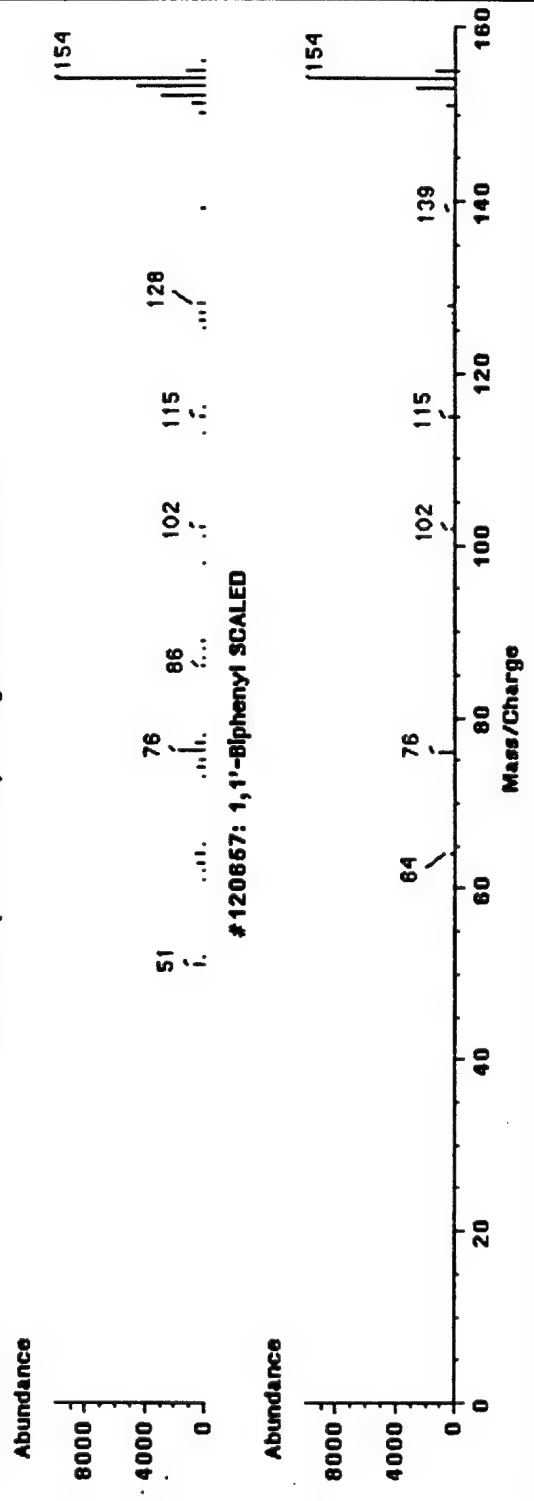
Scan 777 (14.243 min) of Fog0101001.d SCALED

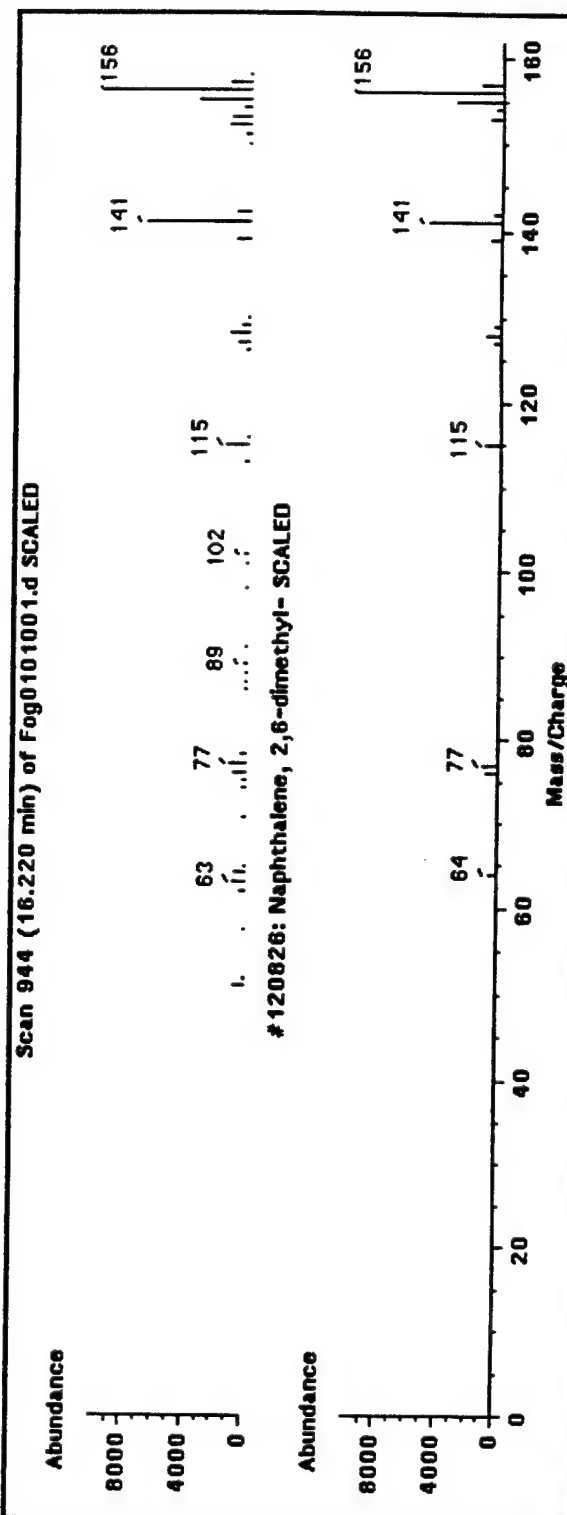


#119407: Quinoline, 6-methyl- SCALED

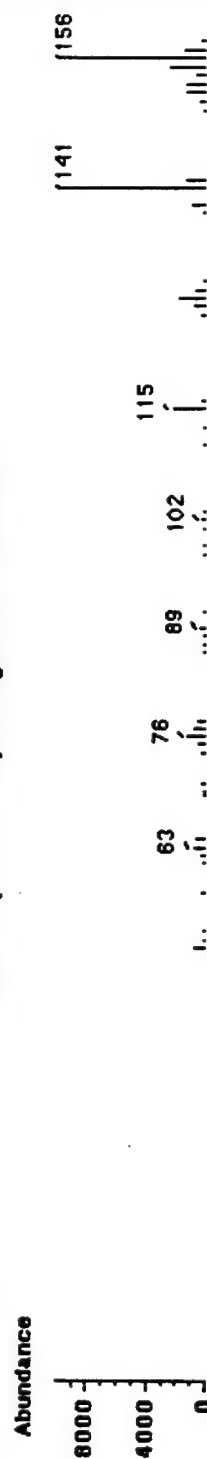


Scan 867 (16.309 min) of Fog0101001.d SCALED

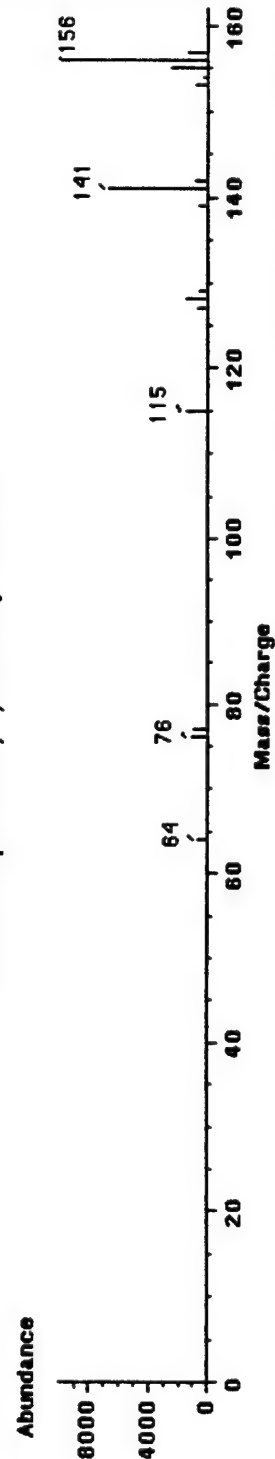




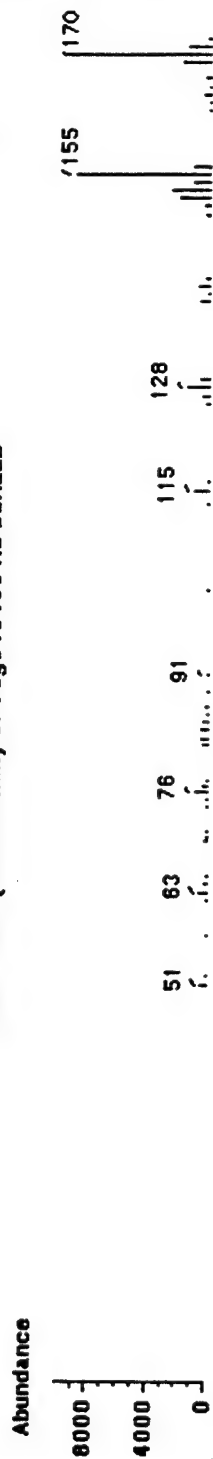
Scan 991 (16.777 min) of Fog0101001.d SCALED



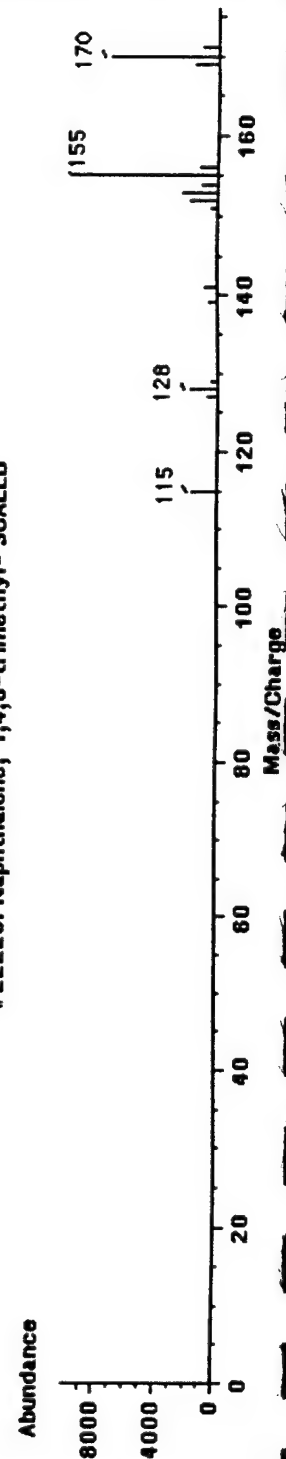
#16351: Naphthalene, 1,3-dimethyl- SCALED



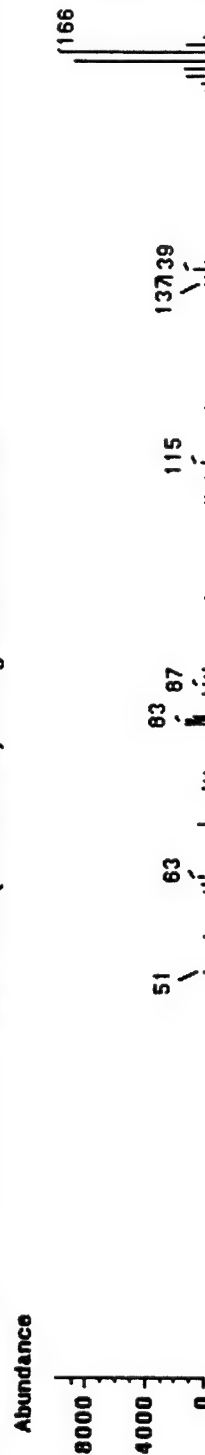
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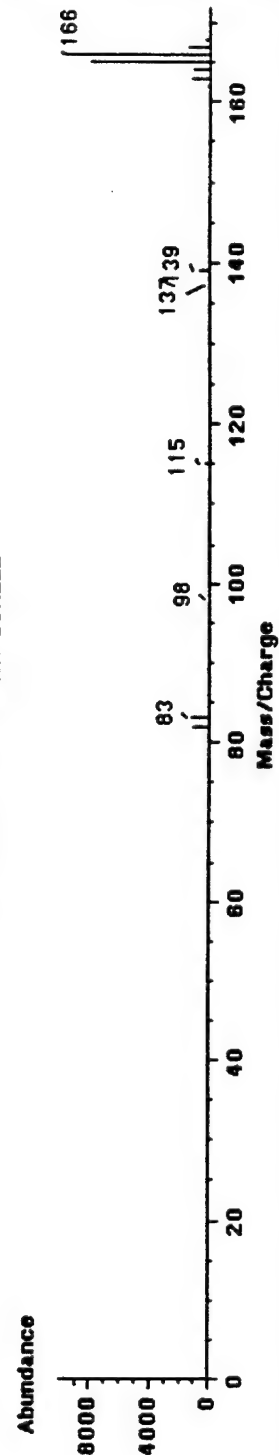
#22223: Naphthalene, 1,4,6-trimethyl- SCALED



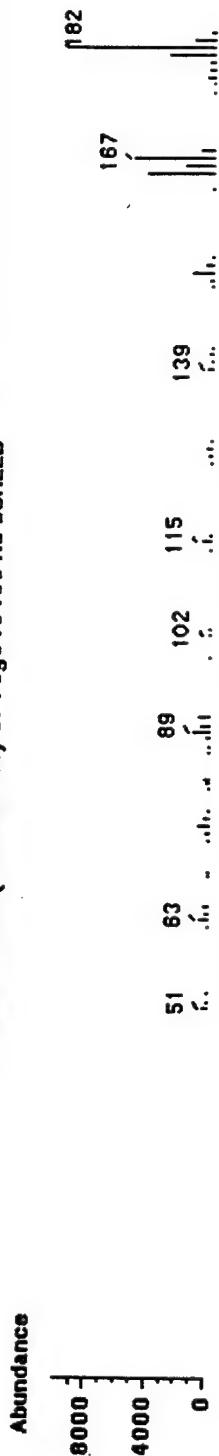
Scan 1499 (22.788 min) of Fog0101001.d SCALED



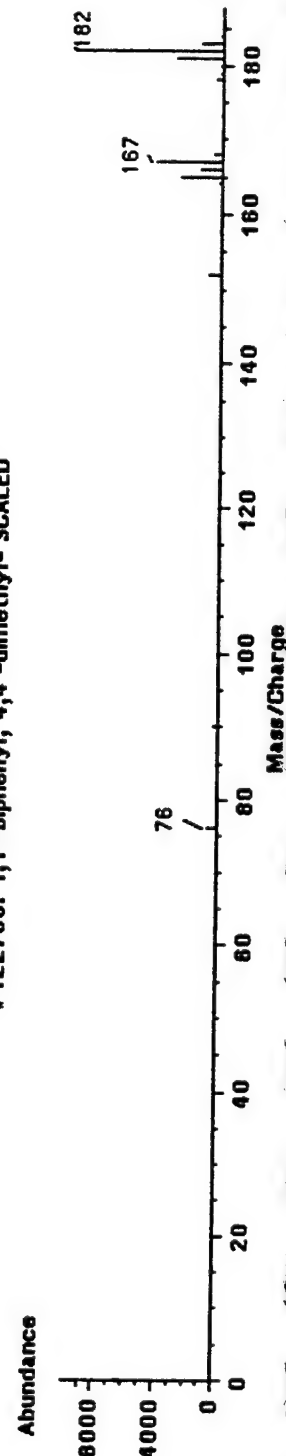
#121667: 9H-Fluorene SCALED

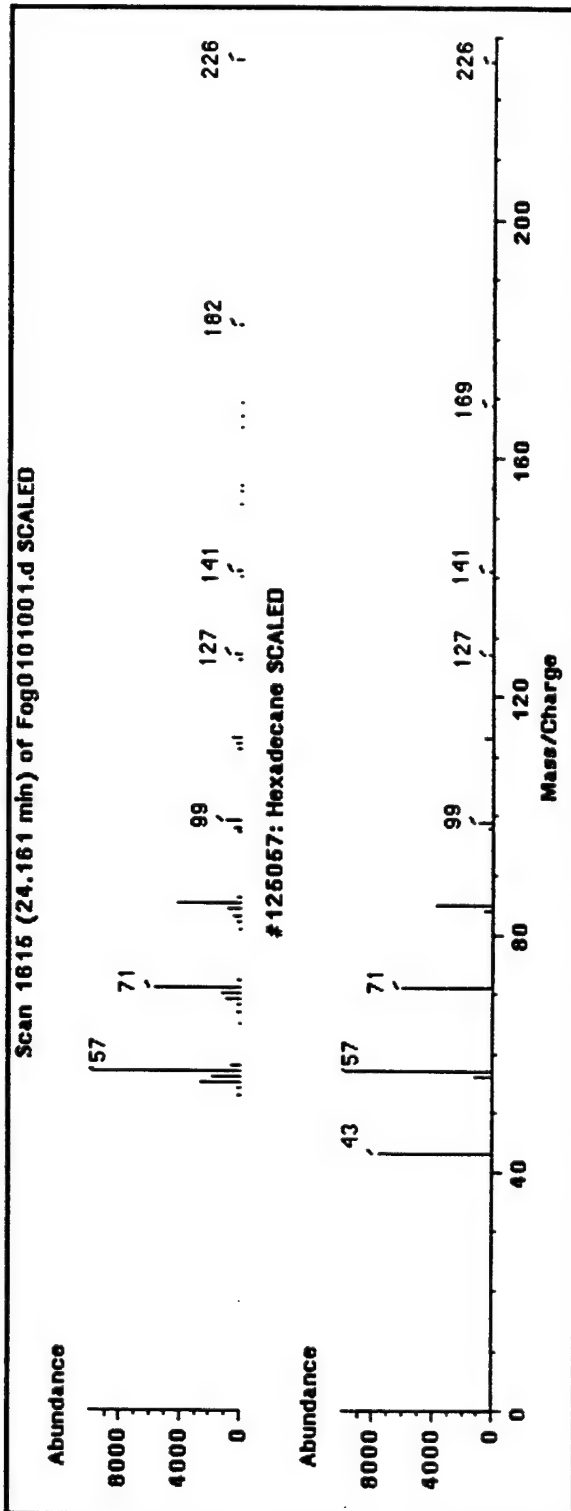


Scan 1598 (23.959 min) of Fog0101001.d SCALED

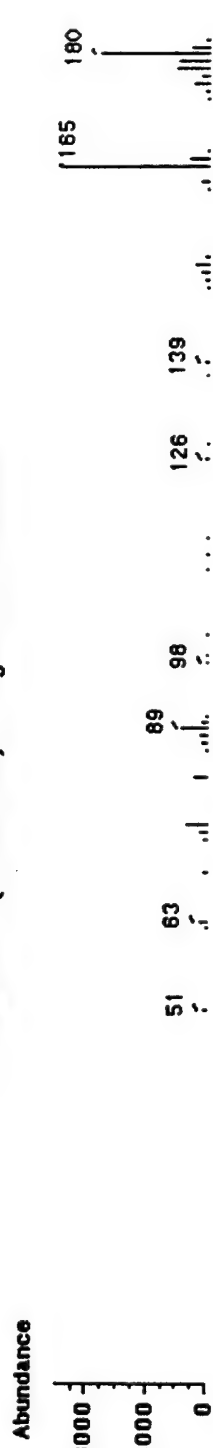


#122768: 1,1'-Biphenyl, 4,4'-dimethyl- SCALED

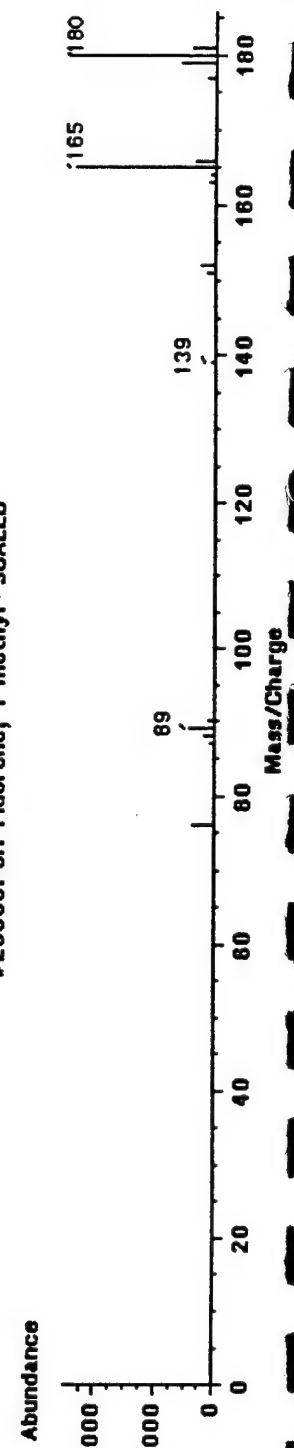




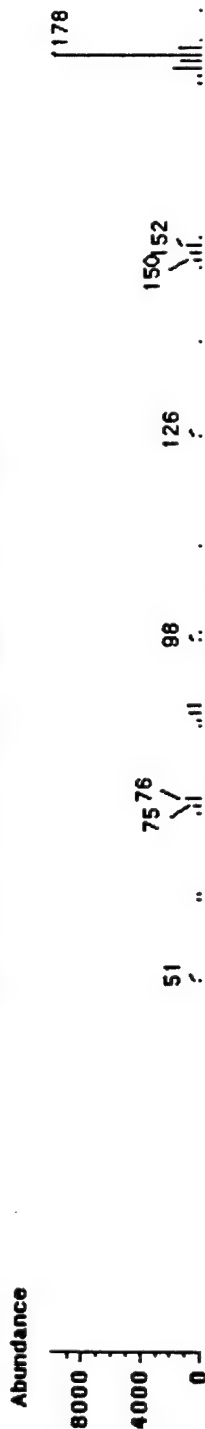
Scan 1881 (27.308 min) of F090101001.d SCALED



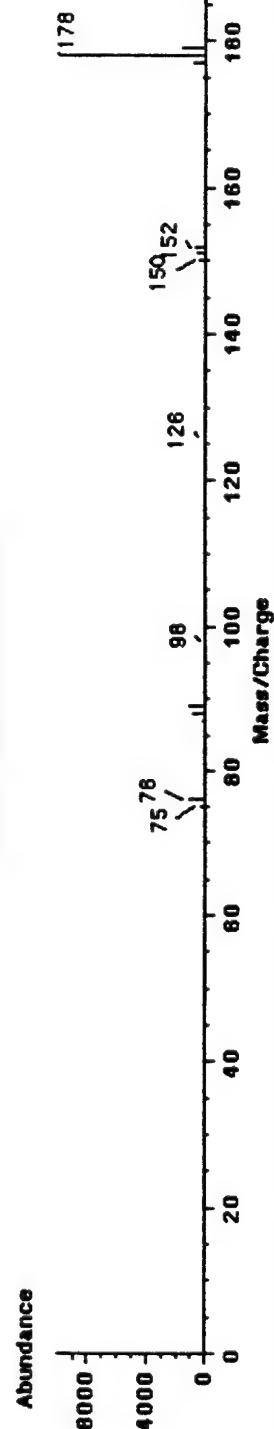
#26308: 9H-Fluorene, 1-methyl- SCALED



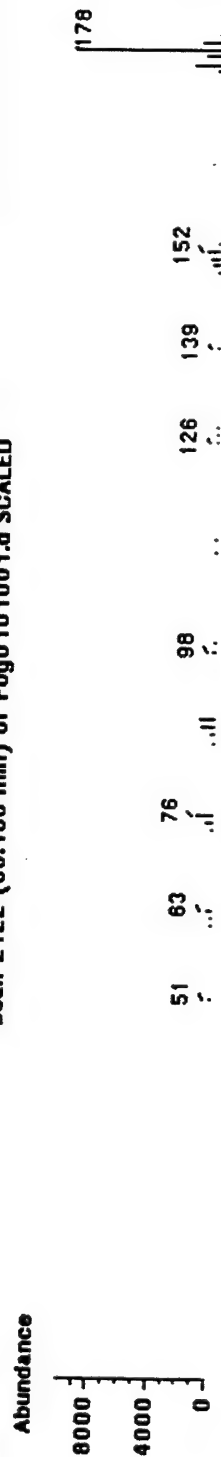
Scan 2092 (29.804 min) of Fog0101001.d SCALED



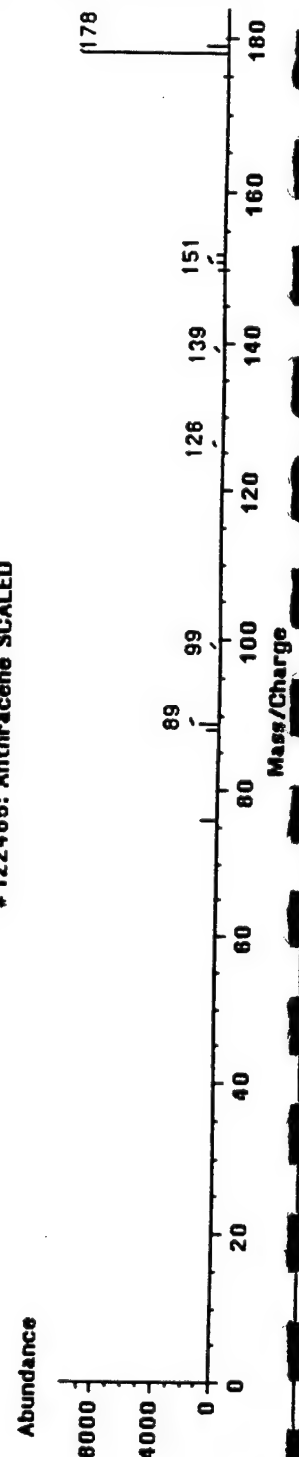
#122458: Phenanthrene SCALED



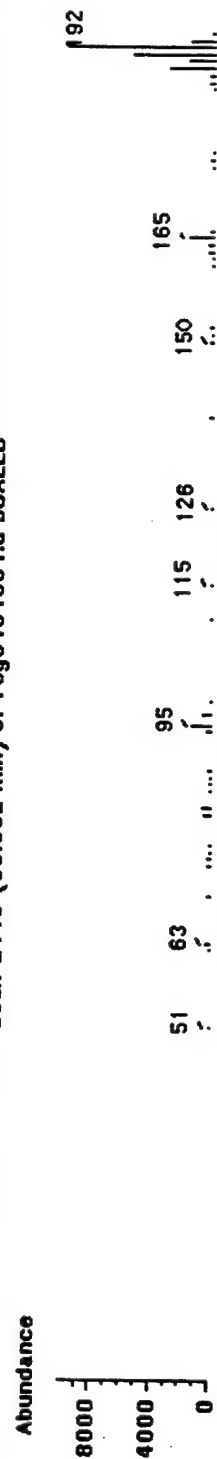
Scan 2122 (30.160 min) of Fog0101001.d SCALED



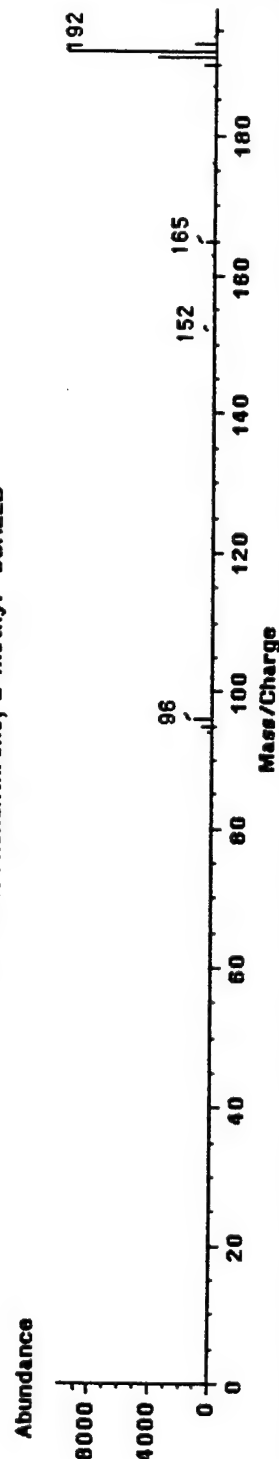
#122465: Anthracene SCALED



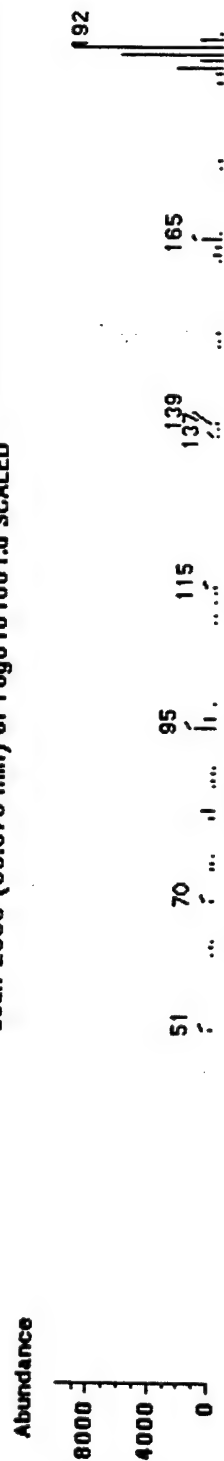
Scan 2446 (33.982 min) of Fog0101001.d SCALED



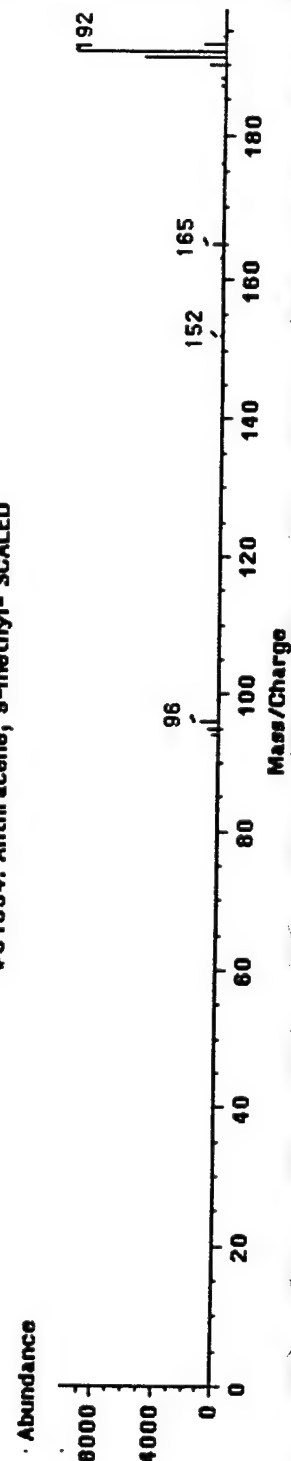
#31346: Phenanthrene, 2-methyl- SCALED

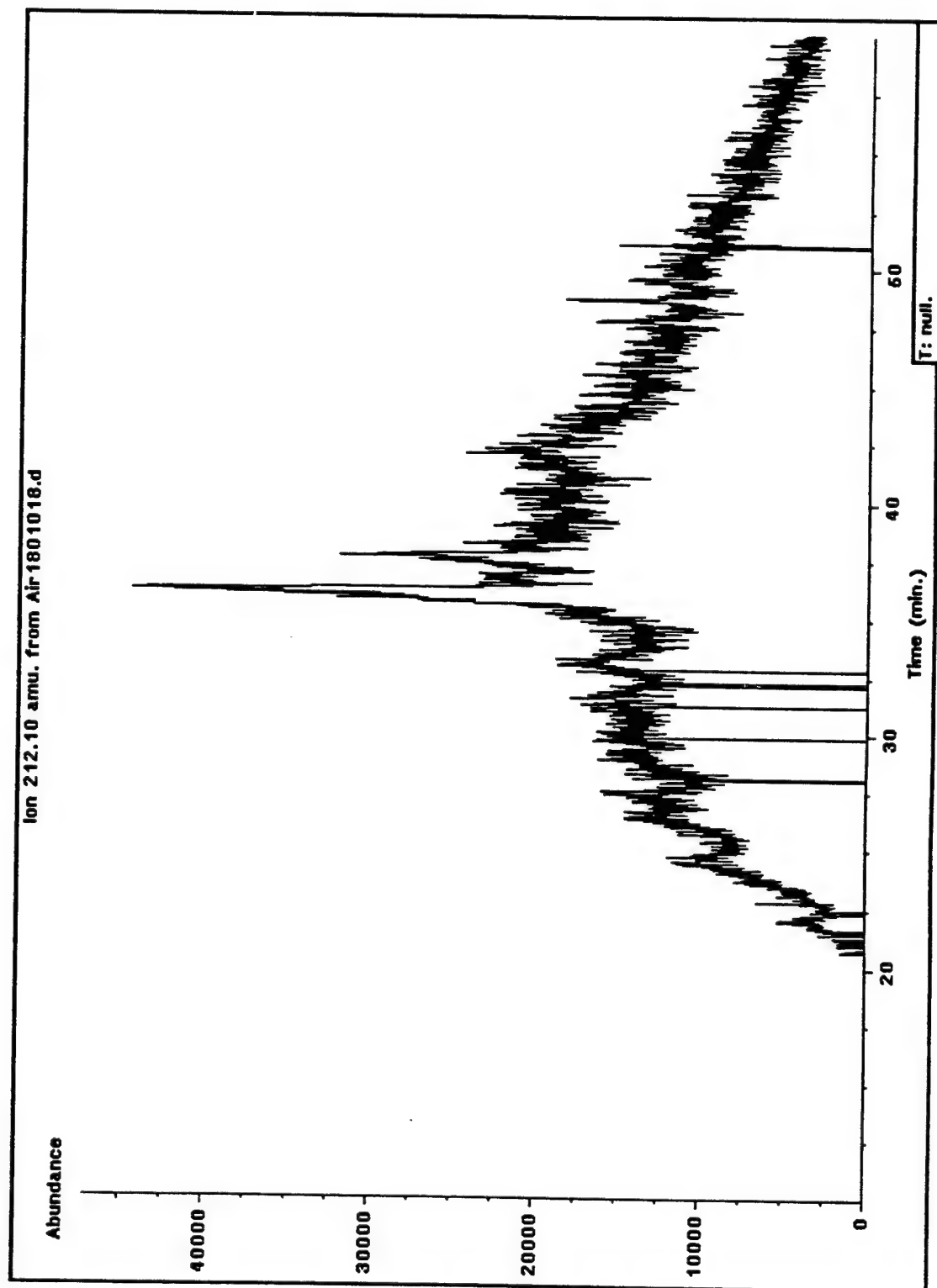


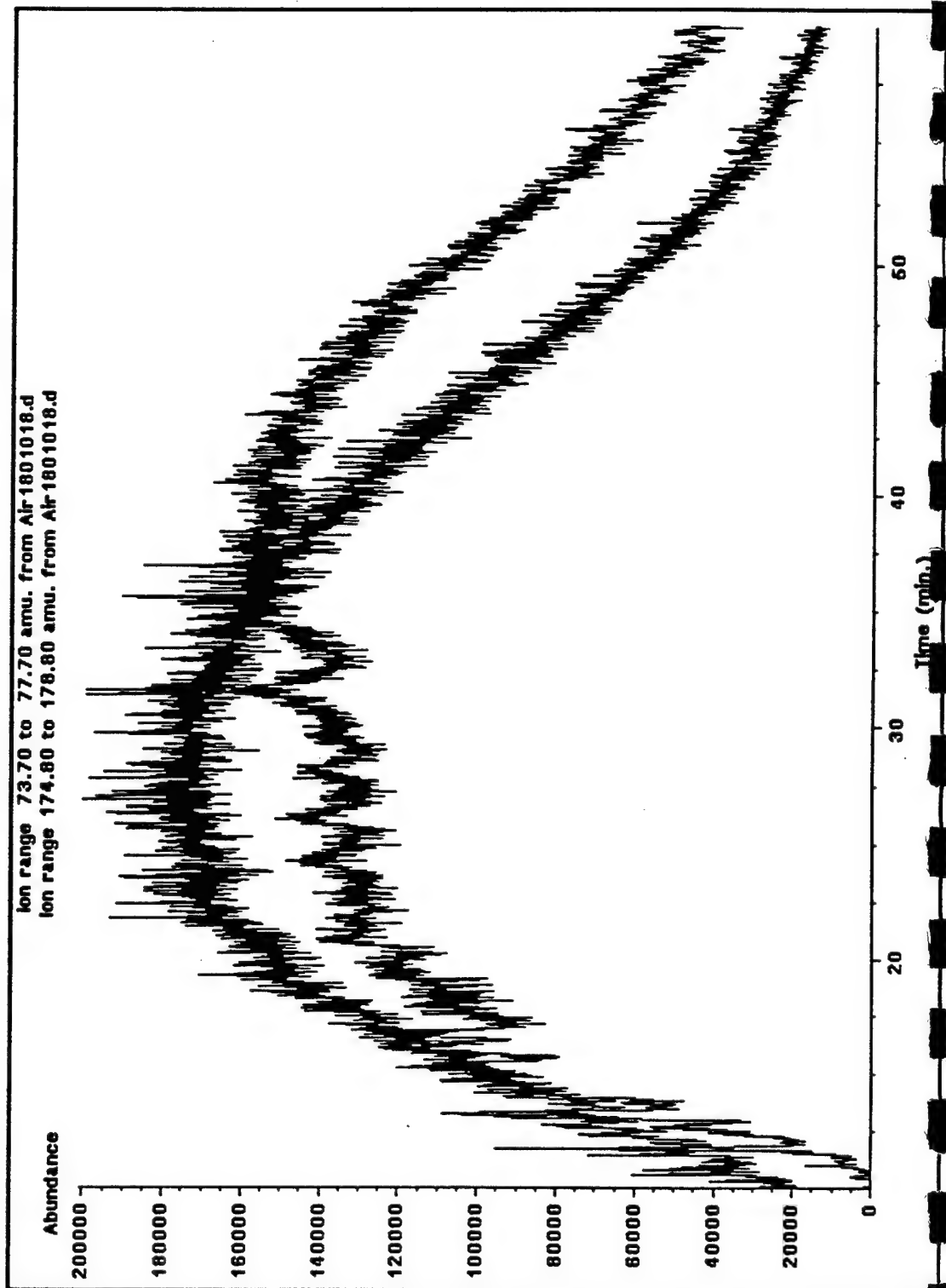
Scan 2606 (35.876 min) of Fog0101001.d SCALED

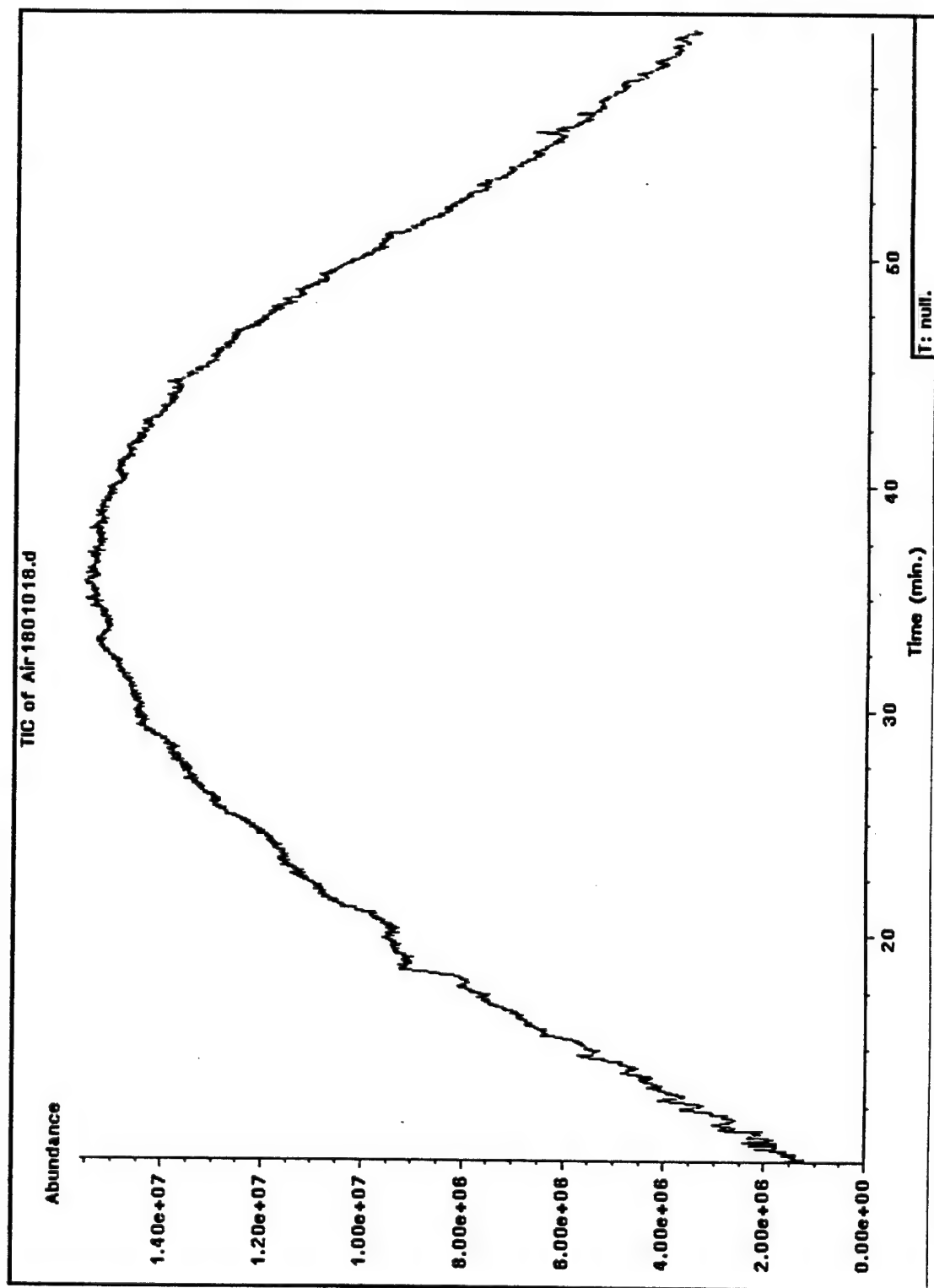


#31354: Anthracene, 9-methyl- SCALED

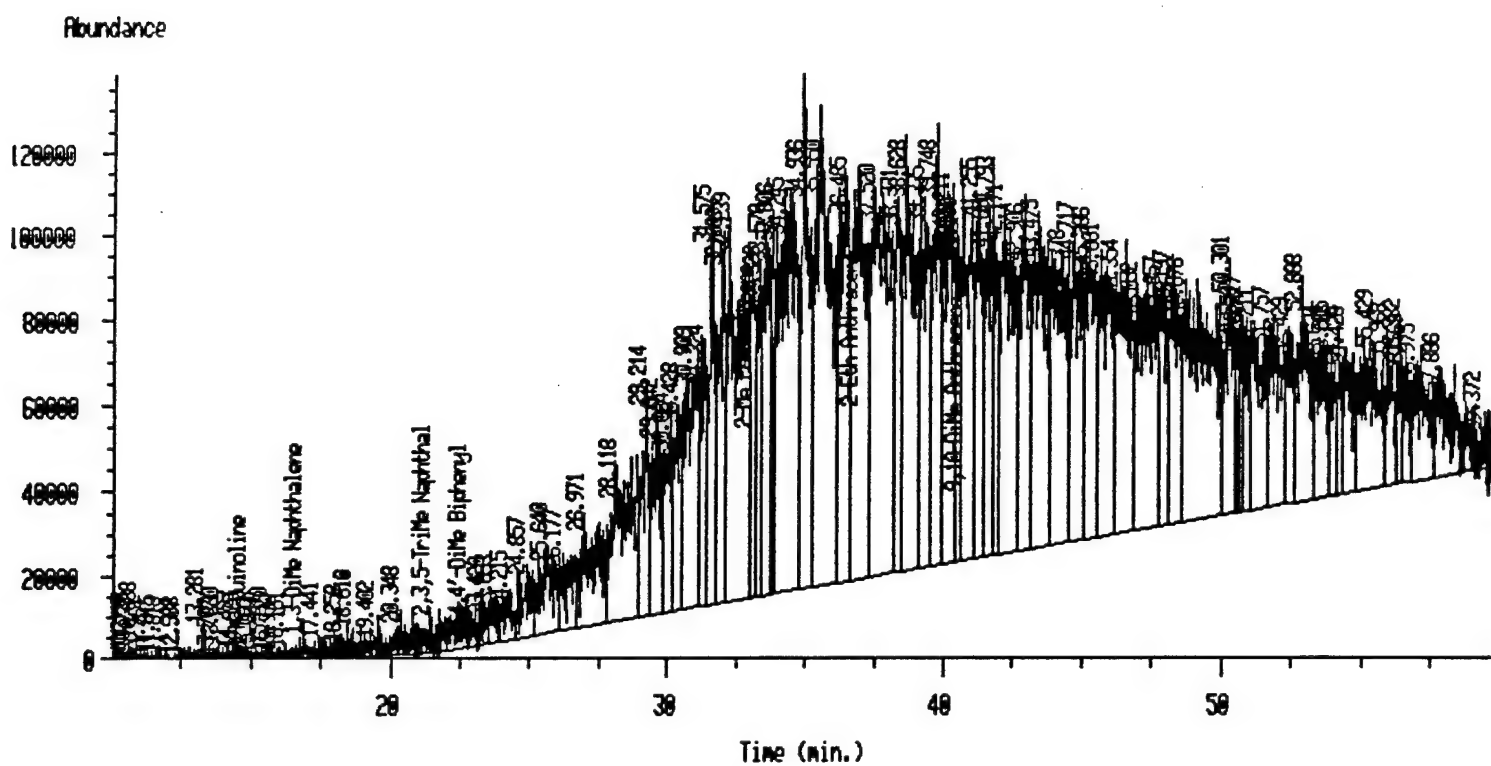








TIC of Air1501015.d



External Standard Report

Information from Current Data File Header:

File: /chem/msd.i/air/Air1501015.d

Operator: Kelly Davis

Date Acquired: Wed Nov 08 95 09:50:46 PM

Sample Name: Sample 12

Misc Info:

Sequence Index: 1 Bottle Number: 15 Repetition Number: 1

Fog Oil PAH's

Calibration Table Last Updated: Fri Nov 10 13:39:41 1995

Reference Peak Window: 0.200 Absolute Minutes

Non-reference Peak Window: 0.200 Absolute Minutes

Default Sample Amount: 0

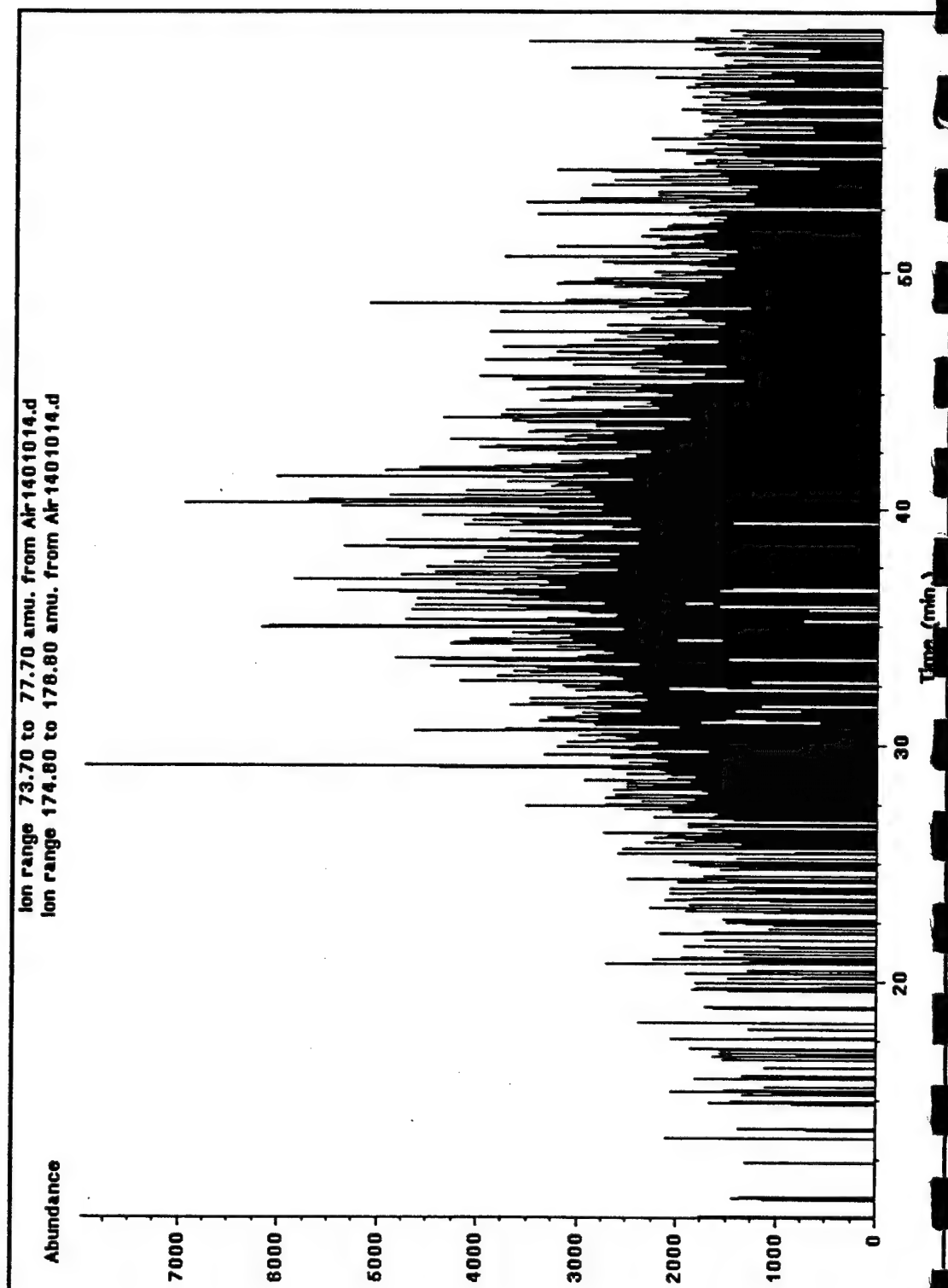
Uncalib. Peak Response Factor: 0

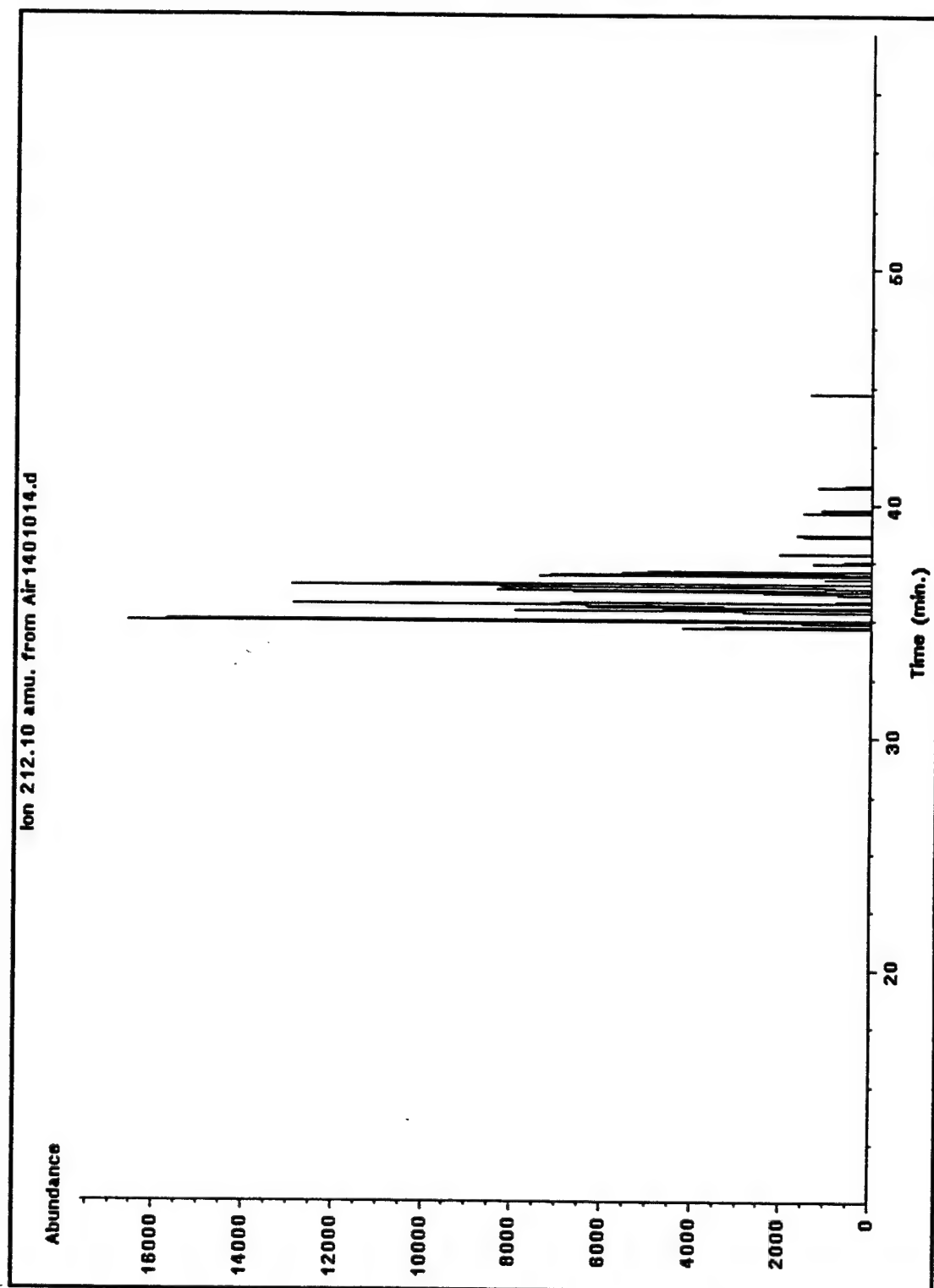
Default Multiplier: 1

Peak Num	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1		-	Total Ion	2-Me Quinoline	-Not Found-	
2	VH	14.793	Total Ion	6-Me Quinoline	135753	
3		-	Total Ion	Biphenyl	-Not Found-	
4		-	Total Ion	2,6-DiMe Naphthalene	-Not Found-	
5	PV	16.842	Total Ion	1,3-DiMe Naphthalene	514095	
6		-	Total Ion	1,2-DiMe Naphthalene	-Not Found-	
7	VV	21.423	Total Ion	2,3,5-TriMe Naphthal	2053799	0.08910 ng/ul
8		-	Total Ion	Hexadecane	-Not Found-	
9		-	Total Ion	Fluorene	-Not Found-	
10	PV	22.731	Total Ion	4,4'-DiMe Biphenyl	4295961	0.4610 ng/ul
11		-	Total Ion	1-Me Fluorene	-Not Found-	
12		-	Total Ion	Phenanthrene	-Not Found-	
13		-	Total Ion	Anthracene	-Not Found-	
14	VV	33.081	Total Ion	2-Me Phenanthrene	10873682	1.542 ng/ul
15		-	Total Ion	9-Me Anthracene	-Not Found-	
16		-	Total Ion	3,6-DiMe Phenanthren	-Not Found-	
17	VV	36.919	Total Ion	2-Eth Anthracene	32146770	5.271 ng/ul
18	VV	40.719	Total Ion	9,10-DiMe Anthracene	19909357	3.846 ng/ul

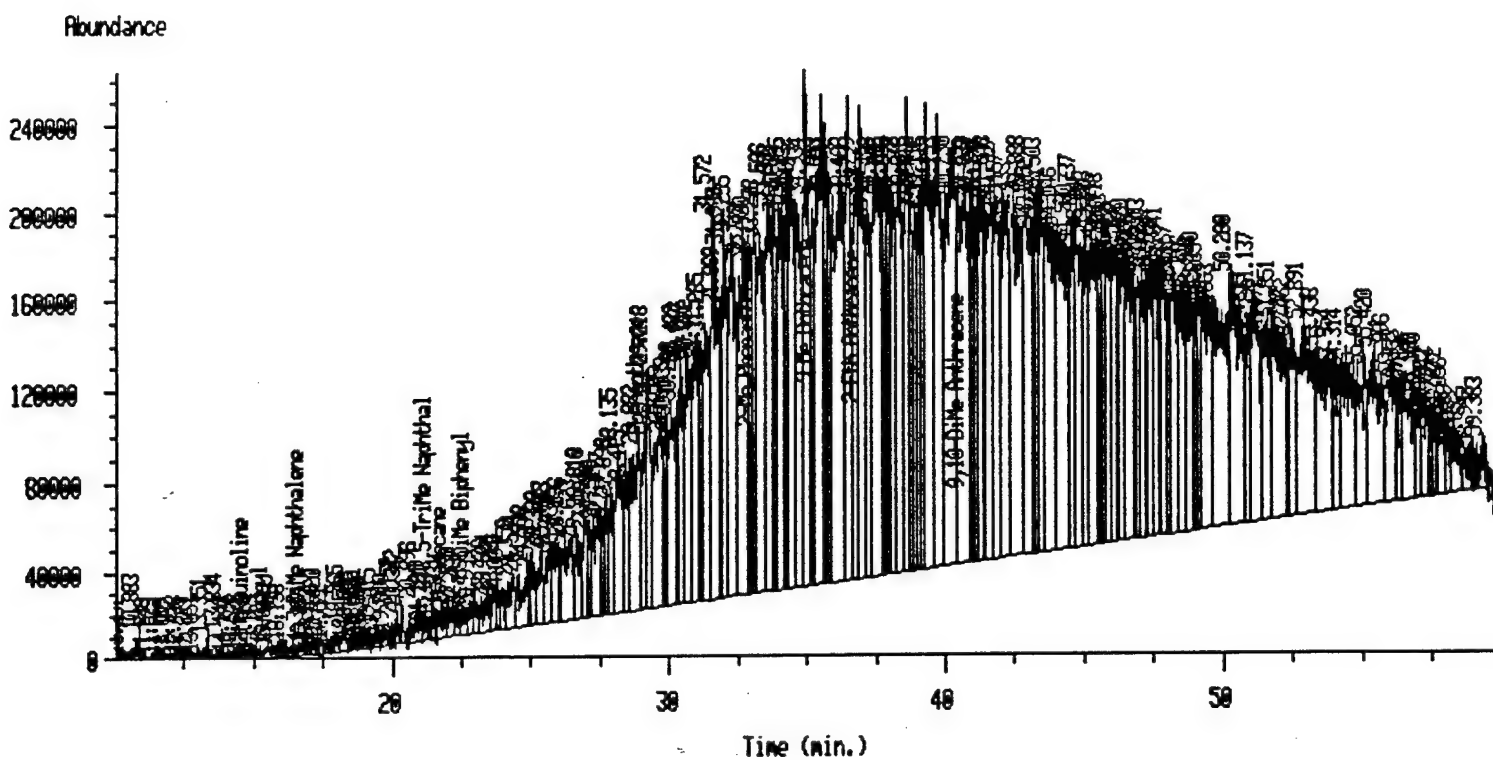
*** REPORT ERRORS ***

*** Not All Calibrated Peaks Found ***





by



External Standard Report

Information from Current Data File Header:

File: /chem/msd.i/air/Air1401014.d

Operator: Kelly Davis

Date Acquired: Wed Nov 08 95 08:43:21 PM

Sample Name: Sample 11

Misc Info:

Sequence Index: 1 Bottle Number: 14 Repetition Number: 1

Fog Oil PAH's

Calibration Table Last Updated: Fri Nov 10 13:39:41 1995

Reference Peak Window: 0.200 Absolute Minutes

Non-reference Peak Window: 0.200 Absolute Minutes

Default Sample Amount: 0

Uncalib. Peak Response Factor: 0

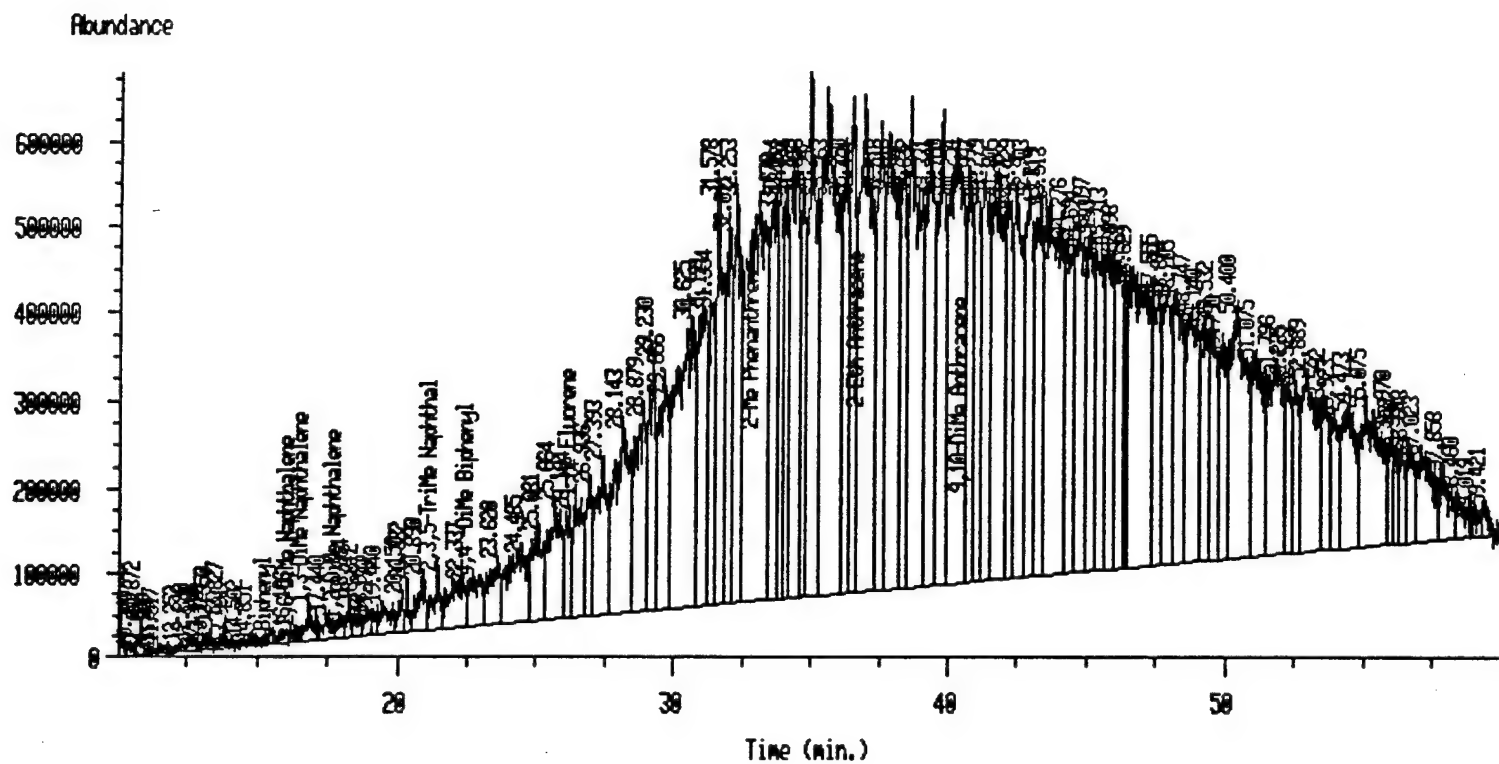
Default Multiplier: 1

Peak Num	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1		-	Total Ion	2-Me Quinoline	-Not Found-	
2	VV	14.790	Total Ion	6-Me Quinoline	286141	
3	VV	15.497	Total Ion	Biphenyl	815376	
4		-	Total Ion	2,6-DiMe Naphthalene	-Not Found-	
5	PV	16.828	Total Ion	1,3-DiMe Naphthalene	1049889	
6		-	Total Ion	1,2-DiMe Naphthalene	-Not Found-	
7	VV	21.420	Total Ion	2,3,5-TriMe Naphthal	1444217	
8	VV	21.972	Total Ion	Hexadecane	1695533	0.2194 ng/ul
9		-	Total Ion	Fluorene	-Not Found-	
10	VV	22.753	Total Ion	4,4'-DiMe Biphenyl	1329757	
11		-	Total Ion	1-Me Fluorene	-Not Found-	
12	VV	29.074	Total Ion	Phenanthrene	7523668	0.9550 ng/ul
13		-	Total Ion	Anthracene	-Not Found-	
14	VV	33.072	Total Ion	2-Me Phenanthrene	15547519	2.361 ng/ul
15	VV	35.194	Total Ion	9-Me Anthracene	11428474	1.670 ng/ul
16		-	Total Ion	3,6-DiMe Phenanthren	-Not Found-	
17	VV	36.922	Total Ion	2-Eth Anthracene	23929794	3.840 ng/ul
18	VV	40.722	Total Ion	9,10-DiMe Anthracene	41605115	8.336 ng/ul

*** REPORT ERRORS ***

*** Not All Calibrated Peaks Found ***

TIC of Air1301013.d



External Standard Report

Information from Current Data File Header:

File: /chem/msd.i/air/Air1301013.d

Operator: Kelly Davis

Date Acquired: Wed Nov 08 95 07:35:58 PM

Sample Name: Sample 10

Misc Info:

Sequence Index: 1

Bottle Number: 13

Repetition Number: 1

Fog Oil PAH's

Calibration Table Last Updated: Fri Nov 10 13:39:41 1995

Reference Peak Window: 0.200 Absolute Minutes

Non-reference Peak Window: 0.200 Absolute Minutes

Default Sample Amount: 0

Uncalib. Peak Response Factor: 0

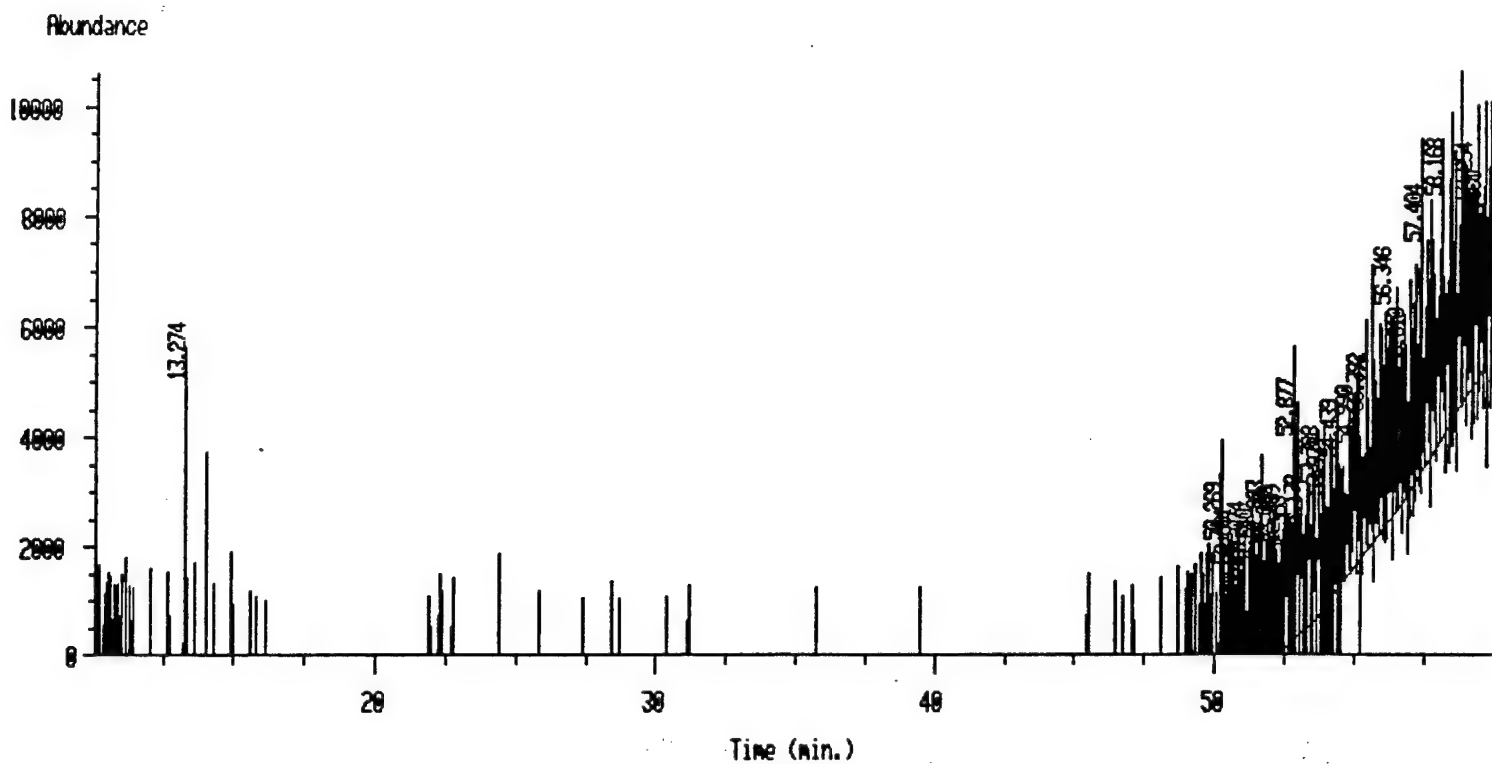
Default Multiplier: 1

Peak Num	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1		-	Total Ion	2-Me Quinoline	-Not Found-	
2		-	Total Ion	6-Me Quinoline	-Not Found-	
3	VV	15.506	Total Ion	Biphenyl	3288090	0.1935 ng/ul
4	VV	16.352	Total Ion	2,6-DiMe Naphthalene	991482	
5	VV	16.830	Total Ion	1,3-DiMe Naphthalene	7401729	0.9269 ng/ul
6	VV	17.995	Total Ion	1,2-DiMe Naphthalene	3354631	0.2572 ng/ul
7	VV	21.426	Total Ion	2,3,5-TriMe Naphthal	12211989	1.812 ng/ul
8		-	Total Ion	Hexadecane	-Not Found-	
9		-	Total Ion	Fluorene	-Not Found-	
10	VV	22.732	Total Ion	4,4'-DiMe Biphenyl	16187392	2.519 ng/ul
11	VV	26.416	Total Ion	1-Me Fluorene	32340216	5.606 ng/ul
12		-	Total Ion	Phenanthrene	-Not Found-	
13		-	Total Ion	Anthracene	-Not Found-	
14	VV	33.077	Total Ion	2-Me Phenanthrene	225777534	39.21 ng/ul
15		-	Total Ion	9-Me Anthracene	-Not Found-	
16		-	Total Ion	3,6-DiMe Phenanthren	-Not Found-	
17	VV	36.921	Total Ion	2-Eth Anthracene	198404003	34.23 ng/ul
18	VV	40.723	Total Ion	9,10-DiMe Anthracene	69975960	14.21 ng/ul

*** REPORT ERRORS ***

*** Not All Calibrated Peaks Found ***

TIC of Air1201012.d



External Standard Report

Information from Current Data File Header:

File: /chem/msd.i/air/Air1201012.d

Operator: Kelly Davis

Date Acquired: Wed Nov 08 95 06:28:34 PM

Sample Name: Sample 9

Misc Info:

Sequence Index: 1 Bottle Number: 12 Repetition Number: 1

Fog Oil PAH's

Calibration Table Last Updated: Fri Nov 10 13:39:41 1995

Reference Peak Window: 0.200 Absolute Minutes

Non-reference Peak Window: 0.200 Absolute Minutes

Default Sample Amount: 0

Uncalib. Peak Response Factor: 0

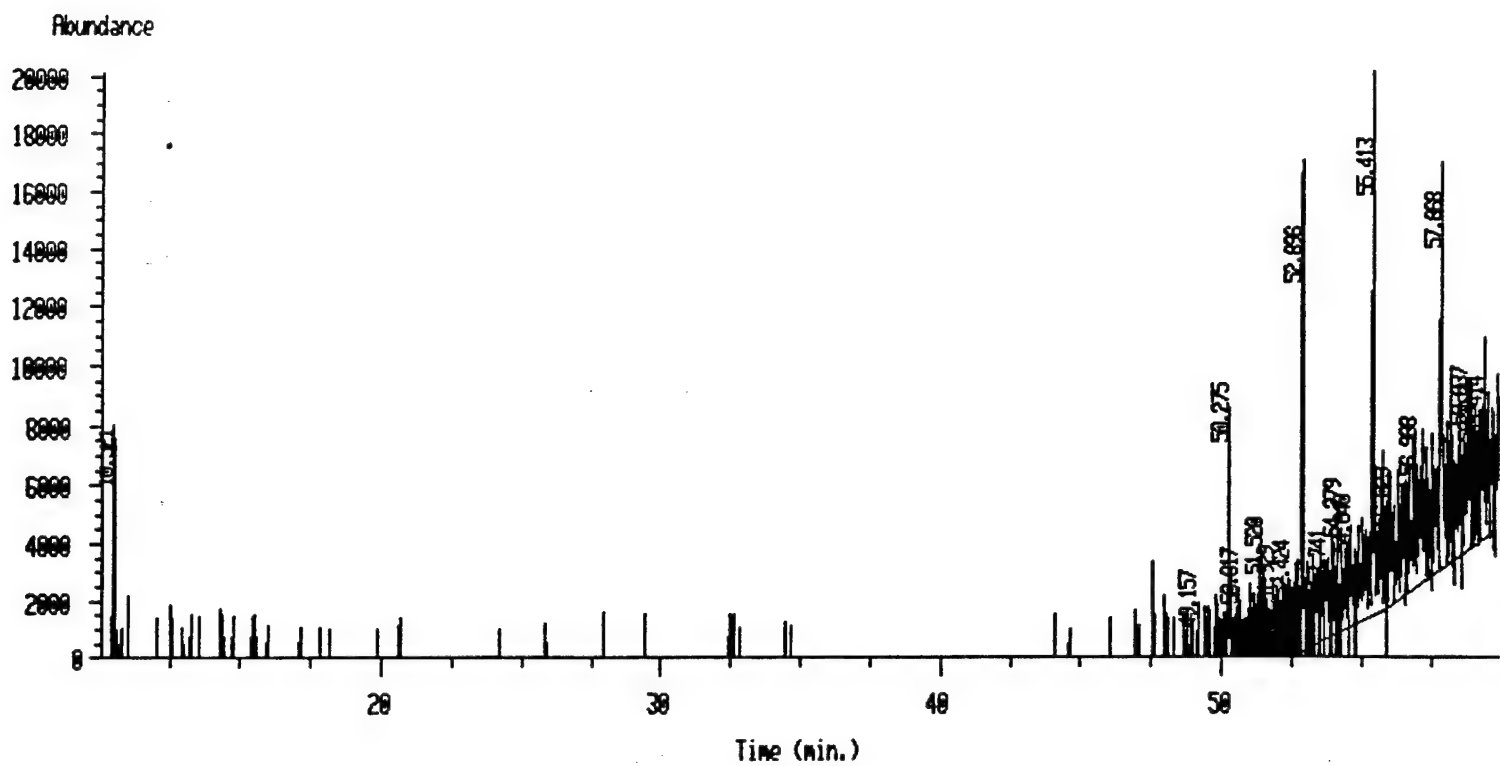
Default Multiplier: 1

Peak Num	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1		-	Total Ion	2-Me Quinoline	-Not Found-	
2		-	Total Ion	6-Me Quinoline	-Not Found-	
3		-	Total Ion	Biphenyl	-Not Found-	
4		-	Total Ion	2,6-DiMe Naphthalene	-Not Found-	
5		-	Total Ion	1,3-DiMe Naphthalene	-Not Found-	
6		-	Total Ion	1,2-DiMe Naphthalene	-Not Found-	
7		-	Total Ion	2,3,5-TriMe Naphthal	-Not Found-	
8		-	Total Ion	Hexadecane	-Not Found-	
9		-	Total Ion	Fluorene	-Not Found-	
10		-	Total Ion	4,4'-DiMe Biphenyl	-Not Found-	
11		-	Total Ion	1-Me Fluorene	-Not Found-	
12		-	Total Ion	Phenanthrene	-Not Found-	
13		-	Total Ion	Anthracene	-Not Found-	
14		-	Total Ion	2-Me Phenanthrene	-Not Found-	
15		-	Total Ion	9-Me Anthracene	-Not Found-	
16		-	Total Ion	3,6-DiMe Phenanthren	-Not Found-	
17		-	Total Ion	2-Eth Anthracene	-Not Found-	
18		-	Total Ion	9,10-DiMe Anthracene	-Not Found-	

*** REPORT ERRORS ***

*** Not All Calibrated Peaks Found ***

TIC of Air1101011.d



External Standard Report

Information from Current Data File Header:

File: /chem/msd.i/air/Air1101011.d

Operator: Kelly Davis

Date Acquired: Wed Nov 08 95 05:21:18 PM

Sample Name: Sample 8

Misc Info:

Sequence Index: 1

Bottle Number: 11

Repetition Number: 1

Fog Oil PAH's

Calibration Table Last Updated: Fri Nov 10 13:39:41 1995

Reference Peak Window: 0.200 Absolute Minutes

Non-reference Peak Window: 0.200 Absolute Minutes

Default Sample Amount: 0

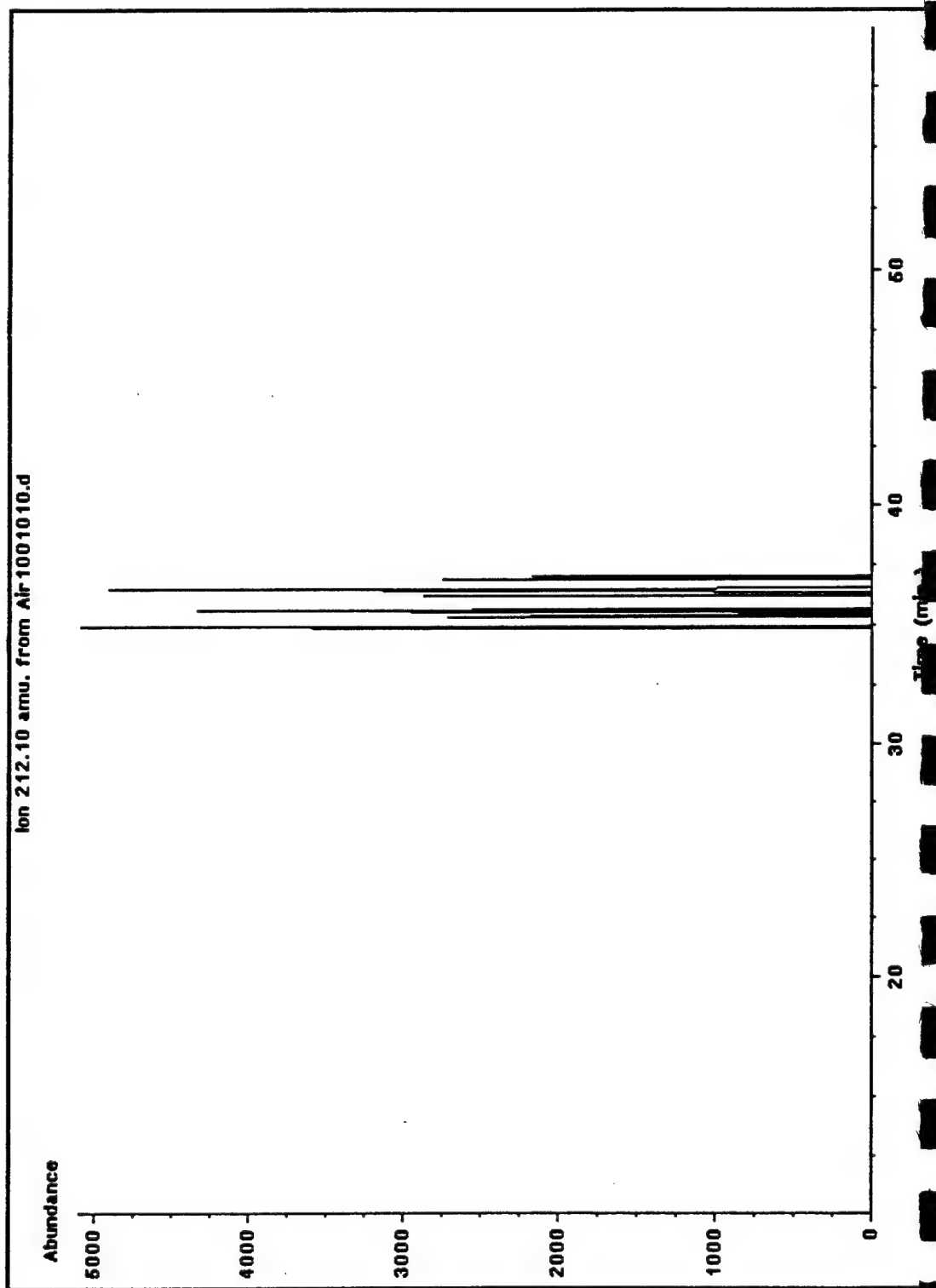
Uncalib. Peak Response Factor: 0

Default Multiplier: 1

Peak Num	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1		-	Total Ion	2-Me Quinoline	-Not Found-	
2		-	Total Ion	6-Me Quinoline	-Not Found-	
3		-	Total Ion	Biphenyl	-Not Found-	
4		-	Total Ion	2,6-DiMe Naphthalene	-Not Found-	
5		-	Total Ion	1,3-DiMe Naphthalene	-Not Found-	
6		-	Total Ion	1,2-DiMe Naphthalene	-Not Found-	
7		-	Total Ion	2,3,5-TriMe Naphthal	-Not Found-	
8		-	Total Ion	Hexadecane	-Not Found-	
9		-	Total Ion	Fluorene	-Not Found-	
10		-	Total Ion	4,4'-DiMe Biphenyl	-Not Found-	
11		-	Total Ion	1-Me Fluorene	-Not Found-	
12		-	Total Ion	Phenanthrene	-Not Found-	
13		-	Total Ion	Anthracene	-Not Found-	
14		-	Total Ion	2-Me Phenanthrene	-Not Found-	
15		-	Total Ion	9-Me Anthracene	-Not Found-	
16		-	Total Ion	3,6-DiMe Phenanthren	-Not Found-	
17		-	Total Ion	2-Eth Anthracene	-Not Found-	
18		-	Total Ion	9,10-DiMe Anthracene	-Not Found-	

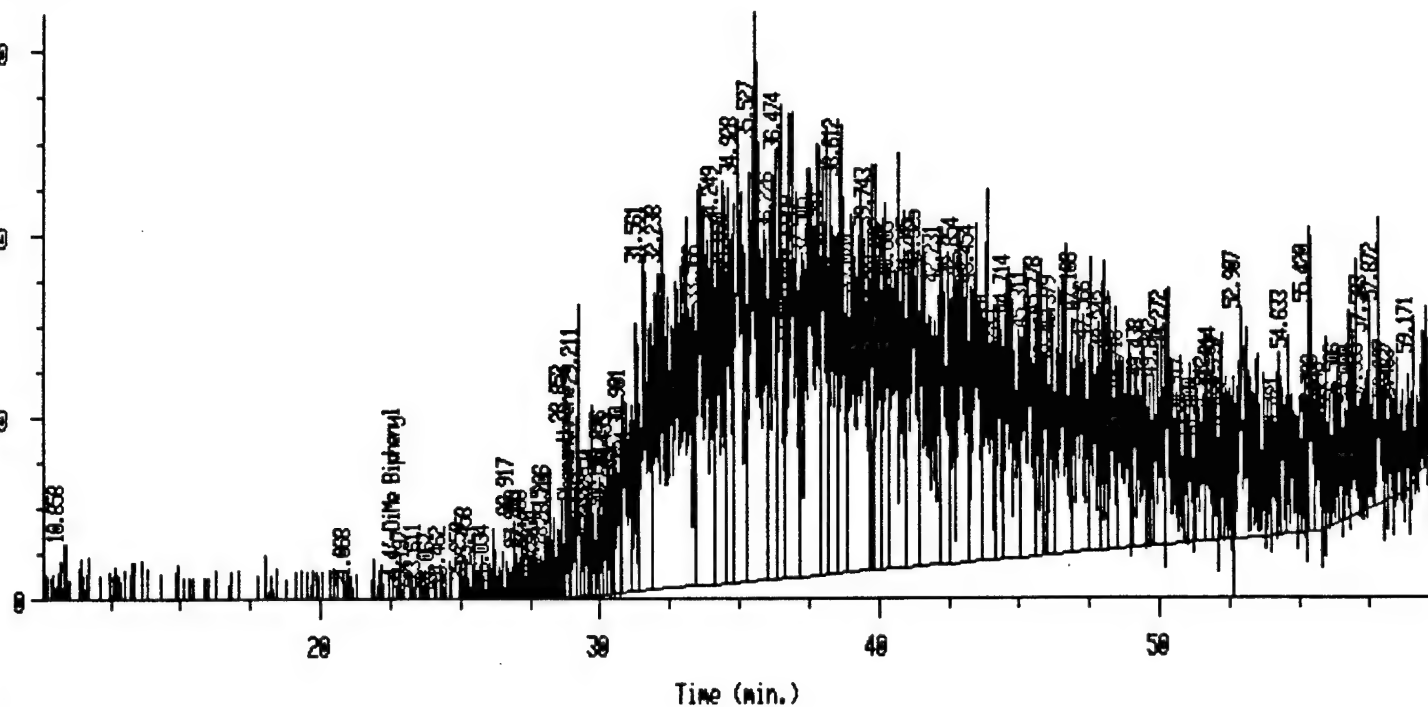
*** REPORT ERRORS ***

*** Not All Calibrated Peaks Found ***



TIC of Air1001010.d

Abundance



External Standard Report

Information from Current Data File Header:

File: /chem/msd.i/air/Air1001010.d

Operator: Kelly Davis

Date Acquired: Wed Nov 08 95 04:18:52 PM

Sample Name: Sample 7

Misc Info:

Sequence Index: 1 Bottle Number: 10 Repetition Number: 1

Fog Oil PAH's

Calibration Table Last Updated: Fri Nov 10 13:39:41 1995

Reference Peak Window: 0.200 Absolute Minutes

Non-reference Peak Window: 0.200 Absolute Minutes

Default Sample Amount: 0

Uncalib. Peak Response Factor: 0

Default Multiplier: 1

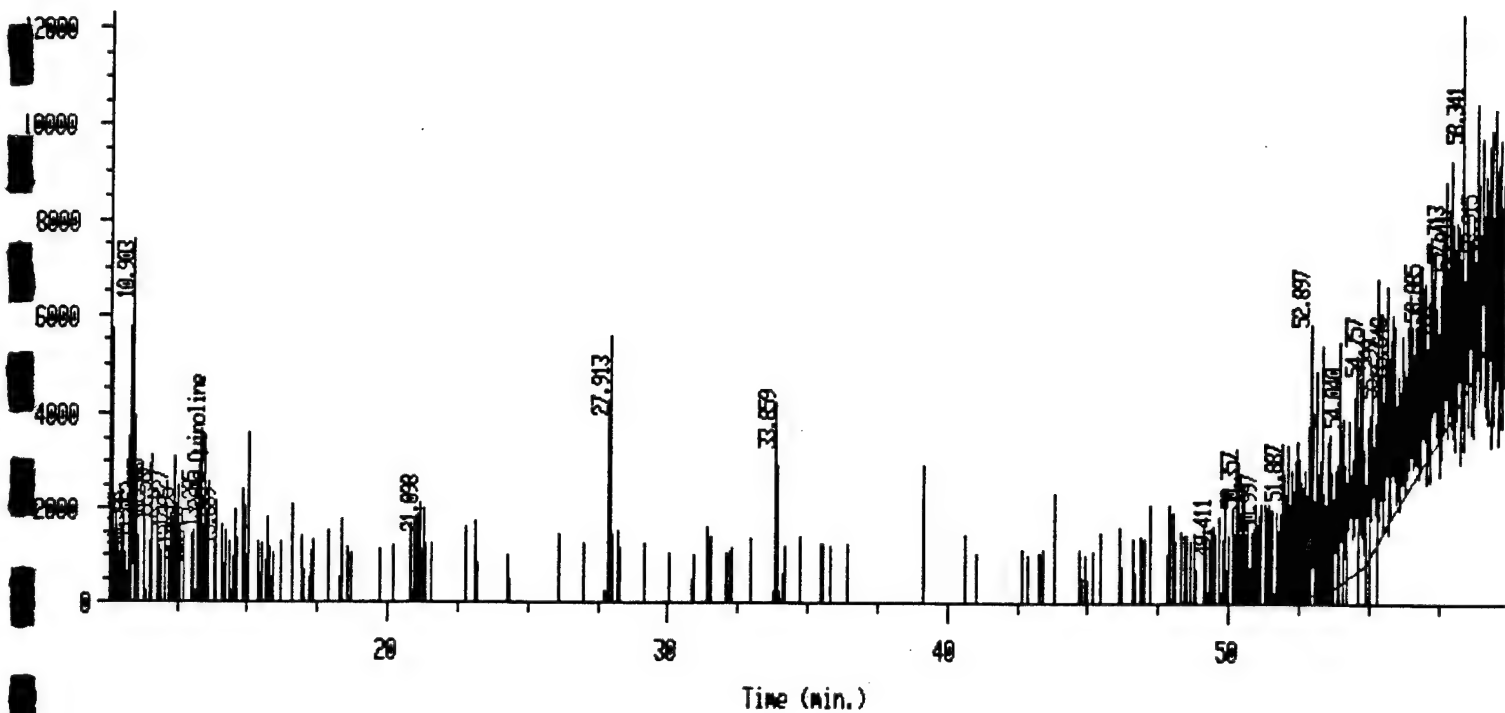
Peak Num	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1		-	Total Ion	2-Me Quinoline	-Not Found-	
2		-	Total Ion	6-Me Quinoline	-Not Found-	
3		-	Total Ion	Biphenyl	-Not Found-	
4		-	Total Ion	2,6-DiMe Naphthalene	-Not Found-	
5		-	Total Ion	1,3-DiMe Naphthalene	-Not Found-	
6		-	Total Ion	1,2-DiMe Naphthalene	-Not Found-	
7		-	Total Ion	2,3,5-TriMe Naphthal	-Not Found-	
8		-	Total Ion	Hexadecane	-Not Found-	
9		-	Total Ion	Fluorene	-Not Found-	
10	BH	22.856	Total Ion	4,4'-DiMe Biphenyl	45226	
11		-	Total Ion	1-Me Fluorene	-Not Found-	
12	VV	29.088	Total Ion	Phenanthrene	386973	
13		-	Total Ion	Anthracene	-Not Found-	
14		-	Total Ion	2-Me Phenanthrene	-Not Found-	
15		-	Total Ion	9-Me Anthracene	-Not Found-	
16		-	Total Ion	3,6-DiMe Phenanthren	-Not Found-	
17	VV	36.903	Total Ion	2-Eth Anthracene	4765229	0.5020 ng/ul
18		-	Total Ion	9,10-DiMe Anthracene	-Not Found-	

*** REPORT ERRORS ***

*** Not All Calibrated Peaks Found ***

TIC of Air0001008.d

Abundance



External Standard Report

Information from Current Data File Header:

File: /chem/msd.i/air/Air0801008.d

Operator:

Date Acquired: Wed Nov 08 95 02:04:43 PM

Sample Name: Sample 6

Misc Info:

Bottle Number: 8 Repetition Number: 1

Fog Oil PAH's

Calibration Table Last Updated: Fri Nov 10 13:39:41 1995

Reference Peak Window: 0.200 Absolute Minutes

Non-reference Peak Window: 0.200 Absolute Minutes

Default Sample Amount: 0

Uncalib. Peak Response Factor: 0

Default Multiplier: 1

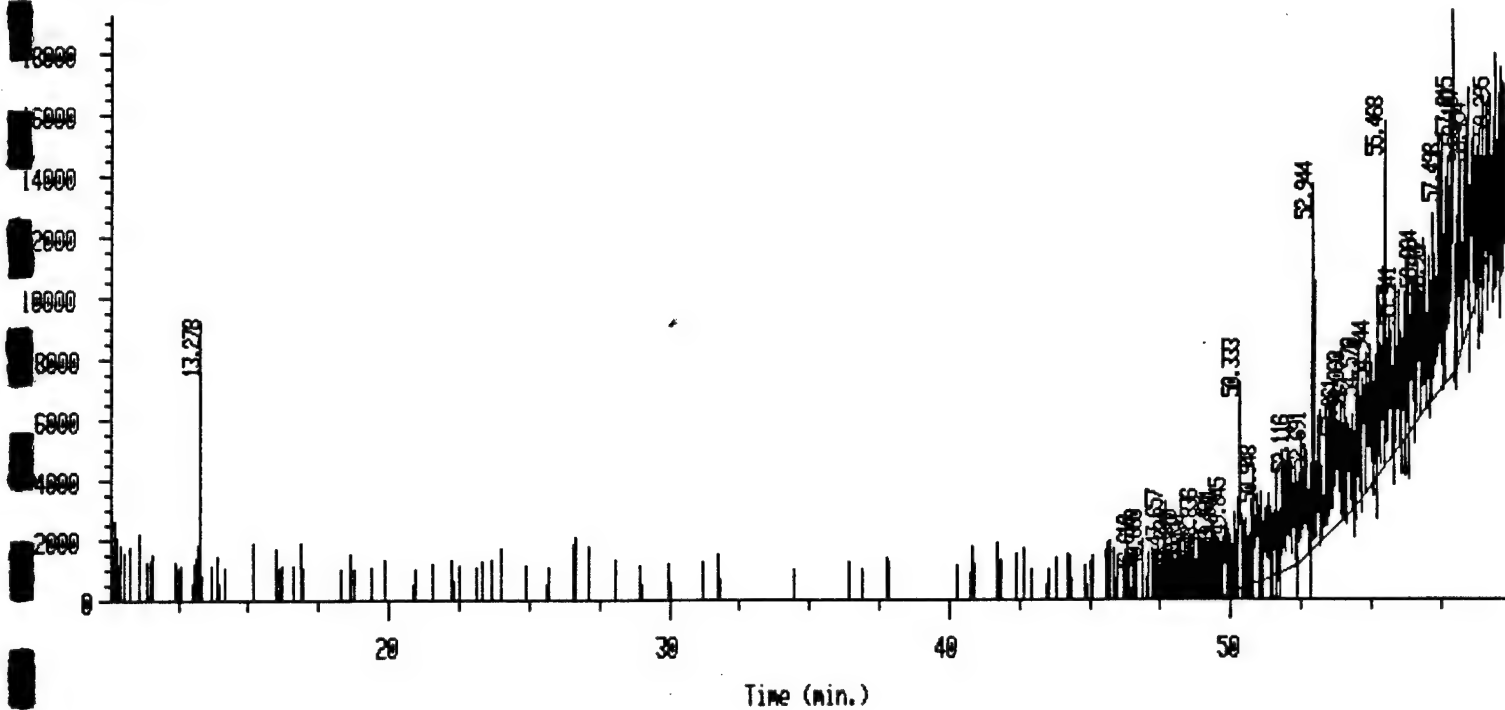
Peak Num	Type	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1		PH	13.488	Total Ion	2-Me Quinoline	62457	
2			-	Total Ion	6-Me Quinoline	-Not Found-	
3			-	Total Ion	Biphenyl	-Not Found-	
4			-	Total Ion	2,6-DiMe Naphthalene	-Not Found-	
5			-	Total Ion	1,3-DiMe Naphthalene	-Not Found-	
6			-	Total Ion	1,2-DiMe Naphthalene	-Not Found-	
7			-	Total Ion	2,3,5-TriMe Naphthal	-Not Found-	
8			-	Total Ion	Hexadecane	-Not Found-	
9			-	Total Ion	Fluorene	-Not Found-	
10			-	Total Ion	4,4'-DiMe Biphenyl	-Not Found-	
11			-	Total Ion	1-Me Fluorene	-Not Found-	
12			-	Total Ion	Phenanthrene	-Not Found-	
13			-	Total Ion	Anthracene	-Not Found-	
14			-	Total Ion	2-Me Phenanthrene	-Not Found-	
15			-	Total Ion	9-Me Anthracene	-Not Found-	
16			-	Total Ion	3,6-DiMe Phenanthren	-Not Found-	
17			-	Total Ion	2-Eth Anthracene	-Not Found-	
18			-	Total Ion	9,10-DiMe Anthracene	-Not Found-	

*** REPORT ERRORS ***

*** Not All Calibrated Peaks Found ***

TIC of Air0701007.d

Abundance



External Standard Report

Information from Current Data File Header:

File: /chem/msd.i/air/Air0701007.d

Operator: Tim E. Spurgeon

Date Acquired: Tue Nov 07 95 11:24:57 PM

Sample Name: Sample 5

Misc Info:

Bottle Number: 7 Repetition Number: 1

Fog Oil PAH's

Calibration Table Last Updated: Fri Nov 10 13:39:41 1995

Reference Peak Window: 0.200 Absolute Minutes

Non-reference Peak Window: 0.200 Absolute Minutes

Default Sample Amount: 0

Uncalib. Peak Response Factor: 0

Default Multiplier: 1

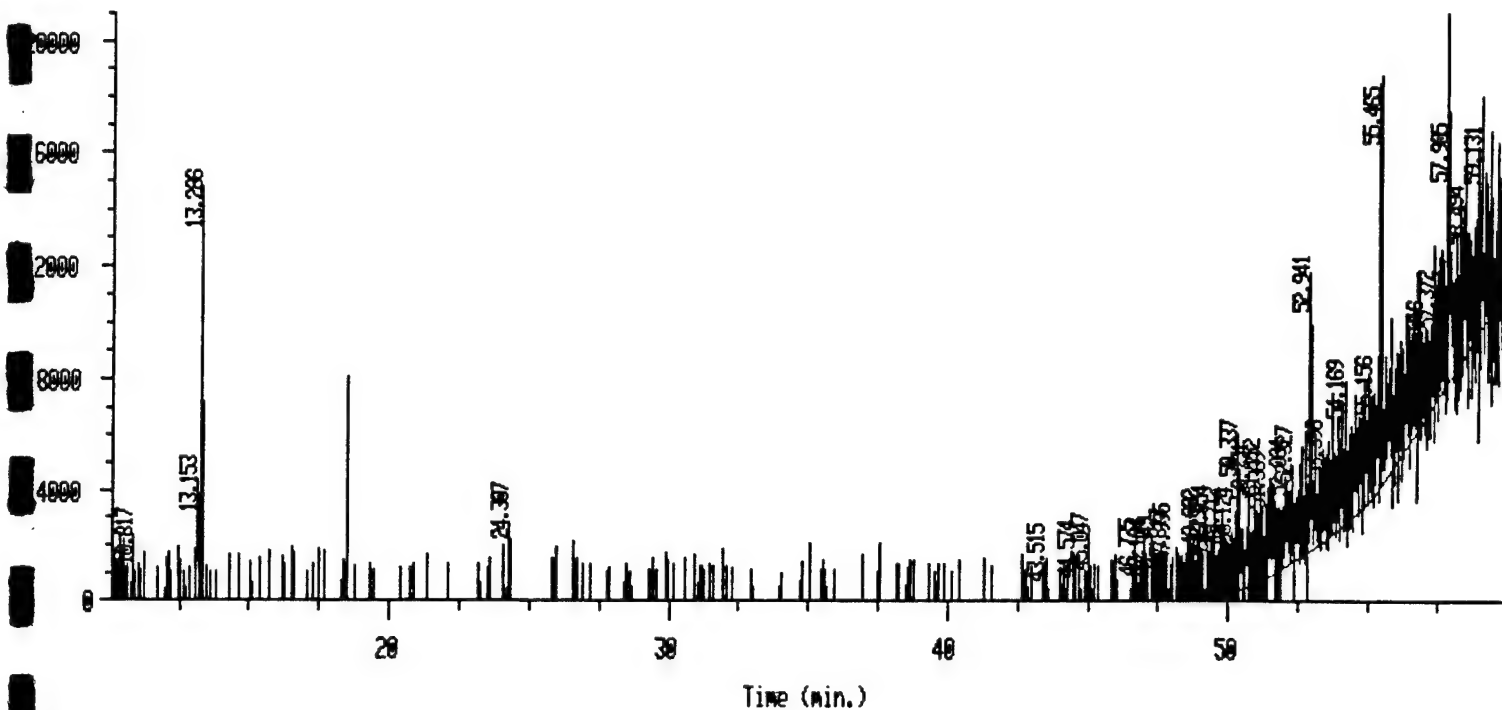
Peak Num	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1		-	Total Ion	2-Me Quinoline	-Not Found-	
2		-	Total Ion	6-Me Quinoline	-Not Found-	
3		-	Total Ion	Biphenyl	-Not Found-	
4		-	Total Ion	2,6-DiMe Naphthalene	-Not Found-	
5		-	Total Ion	1,3-DiMe Naphthalene	-Not Found-	
6		-	Total Ion	1,2-DiMe Naphthalene	-Not Found-	
7		-	Total Ion	2,3,5-TriMe Naphthal	-Not Found-	
8		-	Total Ion	Hexadecane	-Not Found-	
9		-	Total Ion	Fluorene	-Not Found-	
10		-	Total Ion	4,4'-DiMe Biphenyl	-Not Found-	
11		-	Total Ion	1-Me Fluorene	-Not Found-	
12		-	Total Ion	Phenanthrene	-Not Found-	
13		-	Total Ion	Anthracene	-Not Found-	
14		-	Total Ion	2-Me Phenanthrene	-Not Found-	
15		-	Total Ion	9-Me Anthracene	-Not Found-	
16		-	Total Ion	3,6-DiMe Phenanthren	-Not Found-	
17		-	Total Ion	2-Eth Anthracene	-Not Found-	
18		-	Total Ion	9,10-DiMe Anthracene	-Not Found-	

*** REPORT ERRORS ***

*** Not All Calibrated Peaks Found ***

TIC of Air0601006.d

Abundance



External Standard Report

Information from Current Data File Header:

File: /chem/msd.i/air/Air0601006.d

Operator: Tim E. Spurgeon

Date Acquired: Tue Nov 07 95 10:20:48 PM

Sample Name: Sample 4

Misc Info:

Bottle Number: 6 Repetition Number: 1

Fog Oil PAH's

Calibration Table Last Updated: Fri Nov 10 13:39:41 1995

Reference Peak Window: 0.200 Absolute Minutes

Non-reference Peak Window: 0.200 Absolute Minutes

Default Sample Amount: 0

Uncalib. Peak Response Factor: 0

Default Multiplier: 1

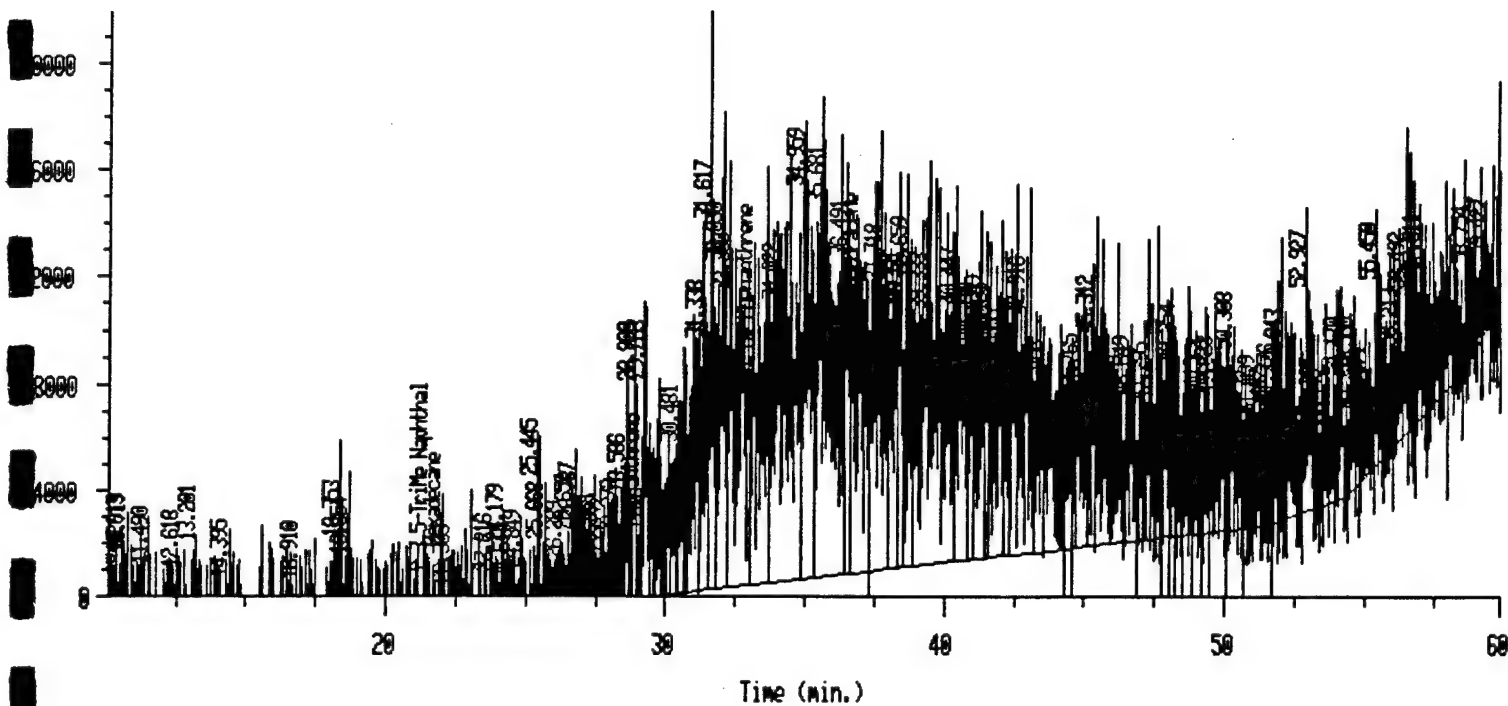
Peak Num	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1		-	Total Ion	2-Me Quinoline	-Not Found-	
2		-	Total Ion	6-Me Quinoline	-Not Found-	
3		-	Total Ion	Biphenyl	-Not Found-	
4		-	Total Ion	2,6-DiMe Naphthalene	-Not Found-	
5		-	Total Ion	1,3-DiMe Naphthalene	-Not Found-	
6		-	Total Ion	1,2-DiMe Naphthalene	-Not Found-	
7		-	Total Ion	2,3,5-TriMe Naphthal	-Not Found-	
8		-	Total Ion	Hexadecane	-Not Found-	
9		-	Total Ion	Fluorene	-Not Found-	
10		-	Total Ion	4,4'-DiMe Biphenyl	-Not Found-	
11		-	Total Ion	1-Me Fluorene	-Not Found-	
12		-	Total Ion	Phenanthrene	-Not Found-	
13		-	Total Ion	Anthracene	-Not Found-	
14		-	Total Ion	2-Me Phenanthrene	-Not Found-	
15		-	Total Ion	9-Me Anthracene	-Not Found-	
16		-	Total Ion	3,6-DiMe Phenanthren	-Not Found-	
17		-	Total Ion	2-Eth Anthracene	-Not Found-	
18		-	Total Ion	9,10-DiMe Anthracene	-Not Found-	

*** REPORT ERRORS ***

*** Not All Calibrated Peaks Found ***

TIC of Air0501005.d

Abundance



External Standard Report

Information from Current Data File Header:

File: /chem/msd.i/air/Air0501005.d

Operator: Kelly Davis

Date Acquired: Tue Nov 07 95 09:04:51 PM

Sample Name: Sample 3

Misc Info:

Sequence Index: 1 Bottle Number: 5 Repetition Number: 1

Fog Oil PAH's

Calibration Table Last Updated: Fri Nov 10 13:39:41 1995

Reference Peak Window: 0.200 Absolute Minutes

Non-reference Peak Window: 0.200 Absolute Minutes

Default Sample Amount: 0

Uncalib. Peak Response Factor: 0

Default Multiplier: 1

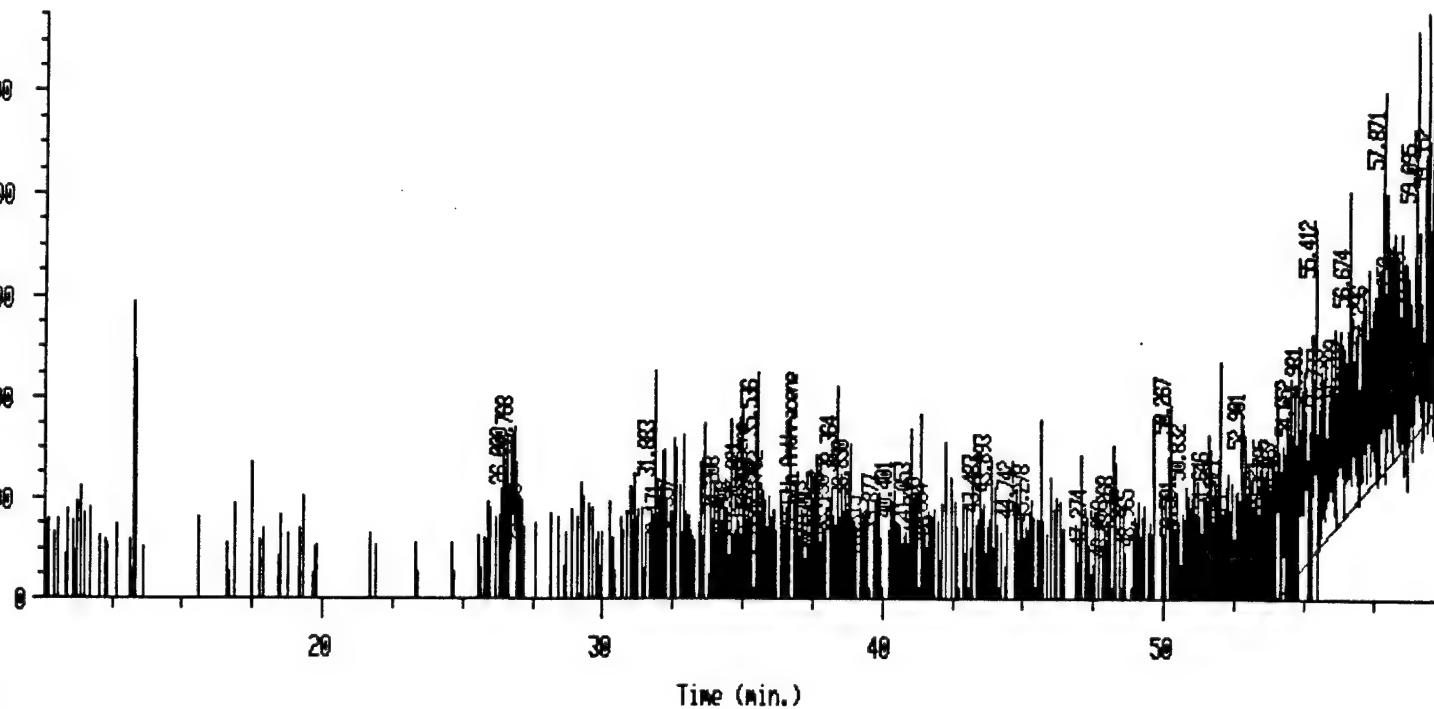
Peak Num	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1		-	Total Ion	2-Me Quinoline	-Not Found-	
2		-	Total Ion	6-Me Quinoline	-Not Found-	
3		-	Total Ion	Biphenyl	-Not Found-	
4		-	Total Ion	2,6-DiMe Naphthalene	-Not Found-	
5		-	Total Ion	1,3-DiMe Naphthalene	-Not Found-	
6		-	Total Ion	1,2-DiMe Naphthalene	-Not Found-	
7	PH	21.487	Total Ion	2,3,5-TriMe Naphthal	101435	
8	PH	21.988	Total Ion	Hexadecane	63197	
9		-	Total Ion	Fluorene	-Not Found-	
10		-	Total Ion	4,4'-DiMe Biphenyl	-Not Found-	
11		-	Total Ion	1-Me Fluorene	-Not Found-	
12	VH	29.097	Total Ion	Phenanthrene	139966	
13		-	Total Ion	Anthracene	-Not Found-	
14	VV	33.136	Total Ion	2-Me Phenanthrene	3011993	0.1639 ng/ul
15		-	Total Ion	9-Me Anthracene	-Not Found-	
16		-	Total Ion	3,6-DiMe Phenanthren	-Not Found-	
17	VV	36.884	Total Ion	2-Eth Anthracene	3358759	0.2571 ng/ul
18		-	Total Ion	9,10-DiMe Anthracene	-Not Found-	

*** REPORT ERRORS ***

*** Not All Calibrated Peaks Found ***

TIC of Air0401004.d

Abundance



External Standard Report

Information from Current Data File Header:

File: /chem/msd.i/air/Air0401004.d

Operator: Kelly Davis

Date Acquired: Tue Nov 07 95 04:10:17 PM

Sample Name: Sample 2

Misc Info:

Sequence Index: 1 Bottle Number: 4 Repetition Number: 1

Fog Oil PAH's

Calibration Table Last Updated: Fri Nov 10 13:39:41 1995

Reference Peak Window: 0.200 Absolute Minutes

Non-reference Peak Window: 0.200 Absolute Minutes

Default Sample Amount: 0

Uncalib. Peak Response Factor: 0

Default Multiplier: 1

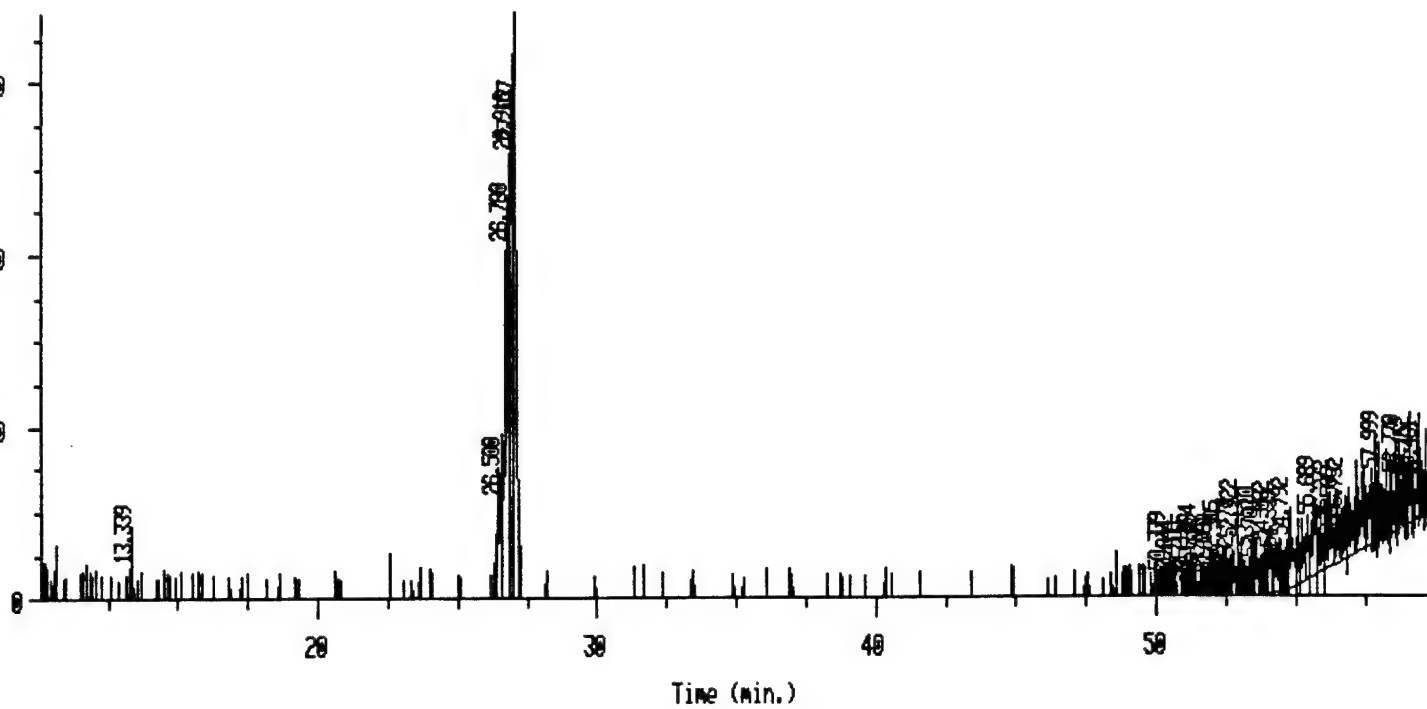
Peak Num	Type	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1			-	Total Ion	2-Me Quinoline	-Not Found-	
2			-	Total Ion	6-Me Quinoline	-Not Found-	
3			-	Total Ion	Biphenyl	-Not Found-	
4			-	Total Ion	2,6-DiMe Naphthalene	-Not Found-	
5			-	Total Ion	1,3-DiMe Naphthalene	-Not Found-	
6			-	Total Ion	1,2-DiMe Naphthalene	-Not Found-	
7			-	Total Ion	2,3,5-TriMe Naphthal	-Not Found-	
8			-	Total Ion	Hexadecane	-Not Found-	
9			-	Total Ion	Fluorene	-Not Found-	
10			-	Total Ion	4,4'-DiMe Biphenyl	-Not Found-	
11			-	Total Ion	1-Me Fluorene	-Not Found-	
12			-	Total Ion	Phenanthrene	-Not Found-	
13			-	Total Ion	Anthracene	-Not Found-	
14			-	Total Ion	2-Me Phenanthrene	-Not Found-	
15		PH	35.184	Total Ion	9-Me Anthracene	25572	
16			-	Total Ion	3,6-DiMe Phenanthren	-Not Found-	
17		BH	36.954	Total Ion	2-Eth Anthracene	82457	
18			-	Total Ion	9,10-DiMe Anthracene	-Not Found-	

*** REPORT ERRORS ***

*** Not All Calibrated Peaks Found ***

TIC of Air0301003.d

Abundance



External Standard Report

Information from Current Data File Header:

File: /chem/msd.i/air/Air0301003.d

Operator: Kelly Davis

Date Acquired: Tue Nov 07 95 03:06:47 PM

Sample Name: Sample 1

Misc Info:

Sequence Index: 1 Bottle Number: 3 Repetition Number: 1

Fog Oil PAH's

Calibration Table Last Updated: Fri Nov 10 13:39:41 1995

Reference Peak Window: 0.200 Absolute Minutes

Non-reference Peak Window: 0.200 Absolute Minutes

Default Sample Amount: 0

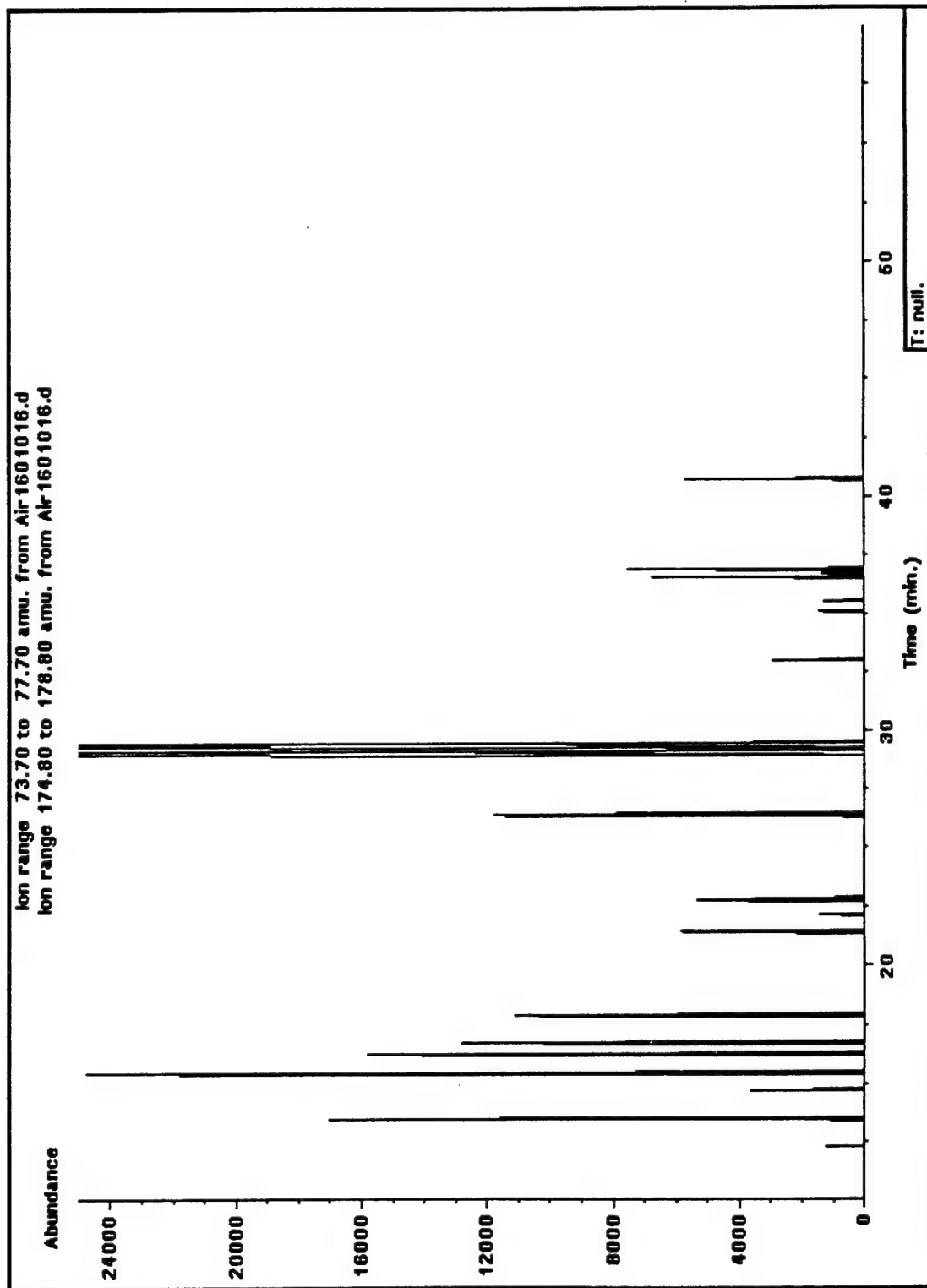
Uncalib. Peak Response Factor: 0

Default Multiplier: 1

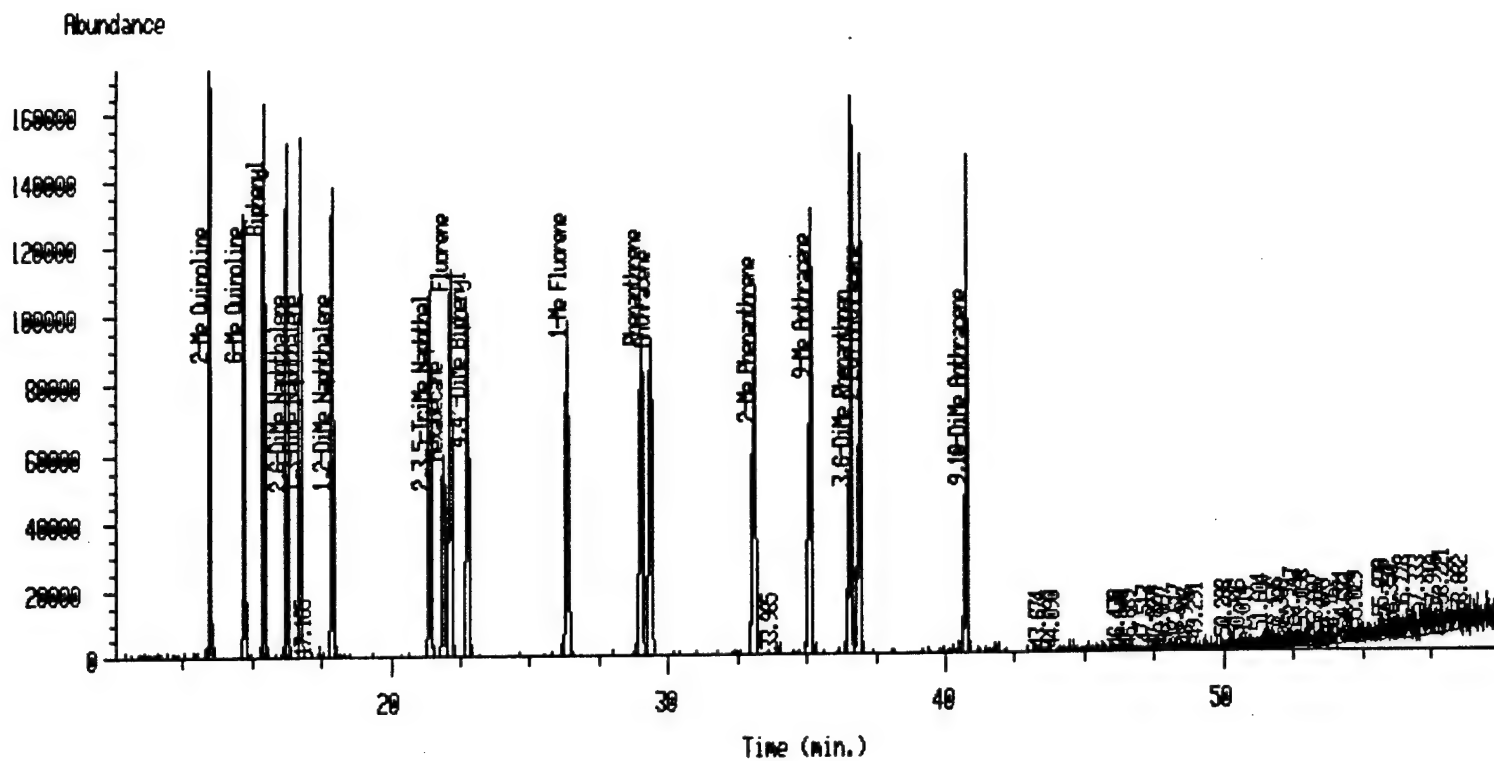
Peak Num	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1		-	Total Ion	2-Me Quinoline	-Not Found-	
2		-	Total Ion	6-Me Quinoline	-Not Found-	
3		-	Total Ion	Biphenyl	-Not Found-	
4		-	Total Ion	2,6-DiMe Naphthalene	-Not Found-	
5		-	Total Ion	1,3-DiMe Naphthalene	-Not Found-	
6		-	Total Ion	1,2-DiMe Naphthalene	-Not Found-	
7		-	Total Ion	2,3,5-TriMe Naphthal	-Not Found-	
8		-	Total Ion	Hexadecane	-Not Found-	
9		-	Total Ion	Fluorene	-Not Found-	
10		-	Total Ion	4,4'-DiMe Biphenyl	-Not Found-	
11		-	Total Ion	1-Me Fluorene	-Not Found-	
12		-	Total Ion	Phenanthrene	-Not Found-	
13		-	Total Ion	Anthracene	-Not Found-	
14		-	Total Ion	2-Me Phenanthrene	-Not Found-	
15		-	Total Ion	9-Me Anthracene	-Not Found-	
16		-	Total Ion	3,6-DiMe Phenanthren	-Not Found-	
17		-	Total Ion	2-Eth Anthracene	-Not Found-	
18		-	Total Ion	9,10-DiMe Anthracene	-Not Found-	

*** REPORT ERRORS ***

*** Not All Calibrated Peaks Found ***



TIC of Air1601016.d



External Standard Report

Information from Current Data File Header:

File: /chem/msd.i/air/Air1601016.d

Operator: Kelly Davis

Date Acquired: Wed Nov 08 95 10:58:03 PM

Sample Name: 1 ug/mL PAH's

Misc Info:

Sequence Index: 1 Bottle Number: 16 Repetition Number: 1

Fog Oil PAH's

Calibration Table Last Updated: Fri Nov 10 13:39:41 1995

Reference Peak Window: 0.200 Absolute Minutes

Non-reference Peak Window: 0.200 Absolute Minutes

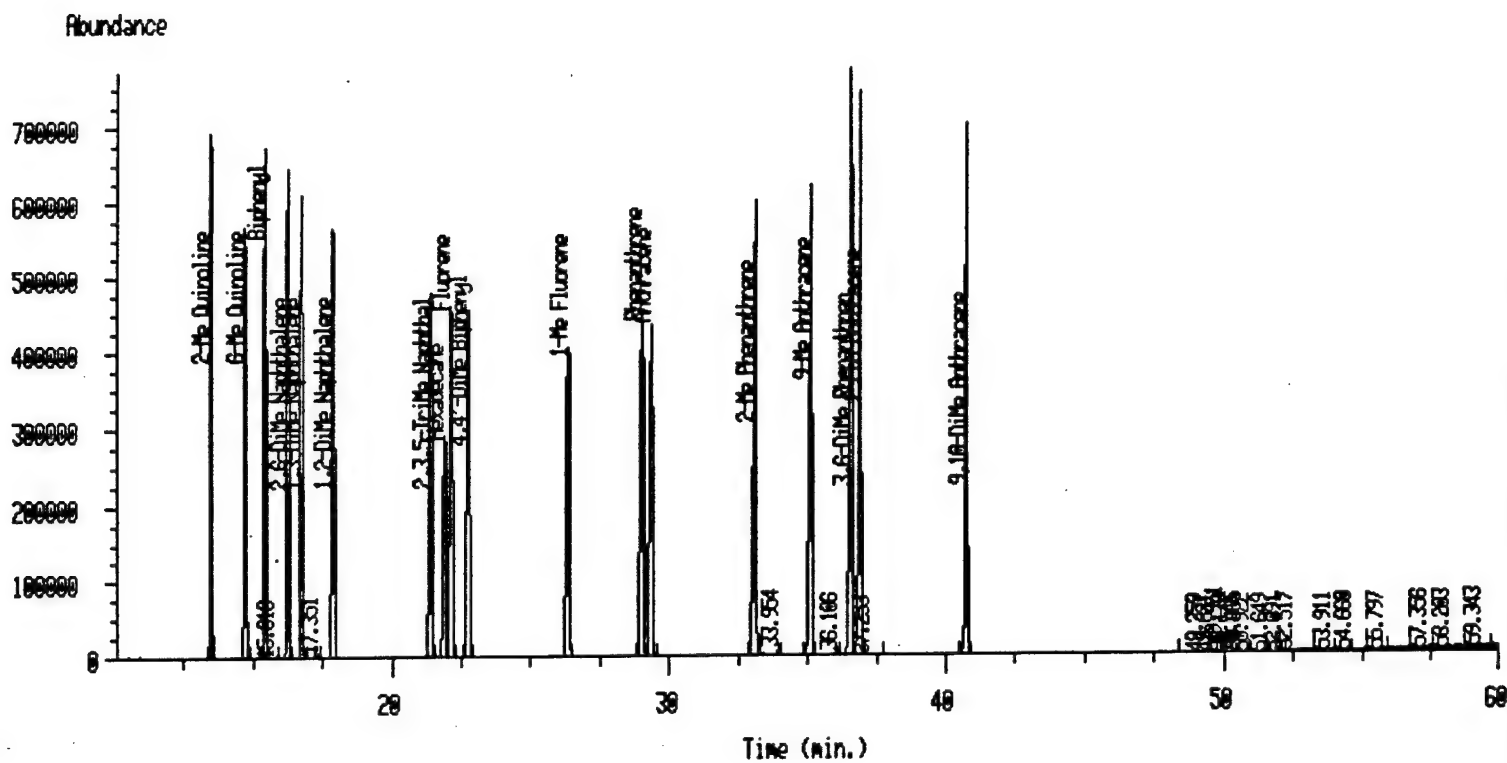
Default Sample Amount: 0

Uncalib. Peak Response Factor: 0

Default Multiplier: 1

Peak Num	Type	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1		BH	13.472	Total Ion	2-Me Quinoline	6275026	1.085 ng/ul
2		BH	14.699	Total Ion	6-Me Quinoline	6045579	1.082 ng/ul
3		BH	15.416	Total Ion	Biphenyl	8690902	1.152 ng/ul
4		PH	16.235	Total Ion	2,6-DiMe Naphthalene	8329952	1.098 ng/ul
5		PH	16.731	Total Ion	1,3-DiMe Naphthalene	8468326	1.113 ng/ul
6		BH	17.867	Total Ion	1,2-DiMe Naphthalene	8050029	1.090 ng/ul
7		BH	21.378	Total Ion	2,3,5-TriMe Naphthal	7767064	1.058 ng/ul
8		PH	21.862	Total Ion	Hexadecane	4800835	1.072 ng/ul
9		PH	22.122	Total Ion	Fluorene	8068735	1.127 ng/ul
10		BH	22.736	Total Ion	4,4'-DiMe Biphenyl	7858848	1.078 ng/ul
11		BH	26.337	Total Ion	1-Me Fluorene	7597842	1.086 ng/ul
12		BH	29.016	Total Ion	Phenanthrene	8044782	1.041 ng/ul
13		PH	29.343	Total Ion	Anthracene	7785419	1.070 ng/ul
14		BH	33.120	Total Ion	2-Me Phenanthrene	8289202	1.089 ng/ul
15		BH	35.135	Total Ion	9-Me Anthracene	8341067	1.116 ng/ul
16		BH	36.590	Total Ion	3,6-DiMe Phenanthren	8799042	1.077 ng/ul
17		PH	36.915	Total Ion	2-Eth Anthracene	8001117	1.066 ng/ul
18		BH	40.754	Total Ion	9,10-DiMe Anthracene	6464744	1.064 ng/ul

TIC of Air8901009.d



External Standard Report

Information from Current Data File Header:

File: /chem/msd.i/air/Air0901009.d

Operator:

Date Acquired: Wed Nov 08 95 03:08:54 PM

Sample Name: 5 ug/mL PAH's

Misc Info:

Bottle Number: 9 Repetition Number: 1

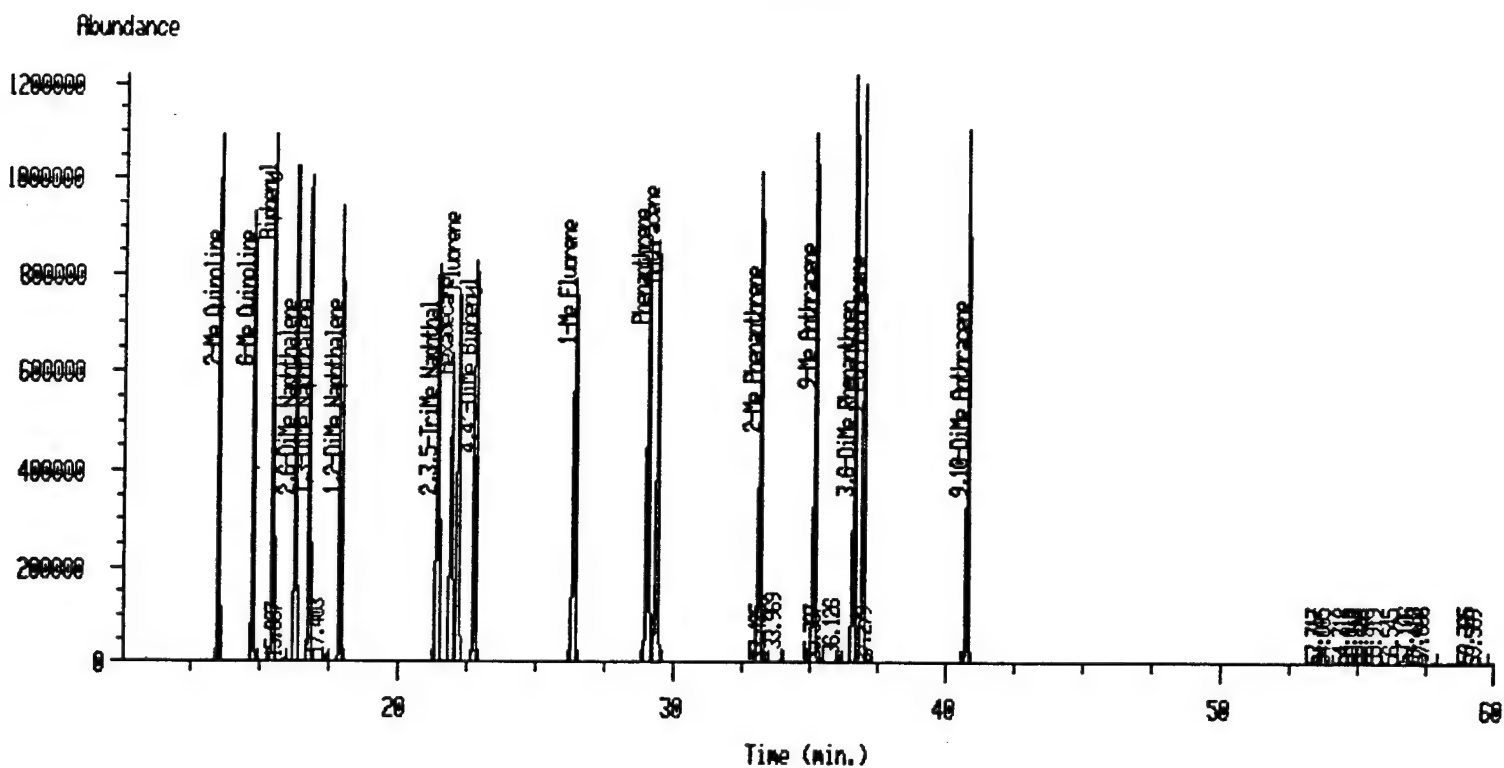
Fog Oil PAH's

Calibration Table Last Updated: Fri Nov 10 13:39:41 1995

Reference Peak Window: 0.200 Absolute Minutes
Non-reference Peak Window: 0.200 Absolute MinutesDefault Sample Amount: 0
Uncalib. Peak Response Factor: 0
Default Multiplier: 1

Peak Num	Type	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1		BH	13.473	Total Ion	2-Me Quinoline	27651933	5.844 ng/ul
2		BH	14.697	Total Ion	6-Me Quinoline	26817396	5.684 ng/ul
3		BH	15.416	Total Ion	Biphenyl	35299679	5.874 ng/ul
4		PH	16.234	Total Ion	2,6-DiMe Naphthalene	35693094	5.910 ng/ul
5		PH	16.727	Total Ion	1,3-DiMe Naphthalene	36092132	5.931 ng/ul
6		PH	17.868	Total Ion	1,2-DiMe Naphthalene	35563337	5.968 ng/ul
7		BH	21.378	Total Ion	2,3,5-TriMe Naphthal	36078888	5.858 ng/ul
8		PH	21.896	Total Ion	Hexadecane	21859178	5.754 ng/ul
9		VH	22.123	Total Ion	Fluorene	33814866	5.852 ng/ul
10		BH	22.735	Total Ion	4,4'-DiMe Biphenyl	35710446	5.899 ng/ul
11		BH	26.346	Total Ion	1-Me Fluorene	34320457	5.968 ng/ul
12		BH	29.019	Total Ion	Phenanthrene	37470690	5.905 ng/ul
13		VH	29.356	Total Ion	Anthracene	35587766	5.979 ng/ul
14		BH	33.106	Total Ion	2-Me Phenanthrene	37537989	6.216 ng/ul
15		BH	35.123	Total Ion	9-Me Anthracene	36724801	6.209 ng/ul
16		PH	36.578	Total Ion	3,6-DiMe Phenanthren	40551423	6.334 ng/ul
17		PH	36.904	Total Ion	2-Eth Anthracene	37497950	6.203 ng/ul
18		BH	40.742	Total Ion	9,10-DiMe Anthracene	30606972	6.060 ng/ul

TIC of Air0201002.d



External Standard Report

Information from Current Data File Header:

File: /chem/msd.i/air/Air0201002.d

Operator: Kelly Davis

Date Acquired: Tue Nov 07 95 12:25:36 PM

Sample Name: 10 ug/mL PAH's

Misc Info:

Sequence Index: 1 Bottle Number: 2 Repetition Number: 1

Fog Oil PAH's

Calibration Table Last Updated: Fri Nov 10 13:39:41 1995

Reference Peak Window: 0.200 Absolute Minutes

Non-reference Peak Window: 0.200 Absolute Minutes

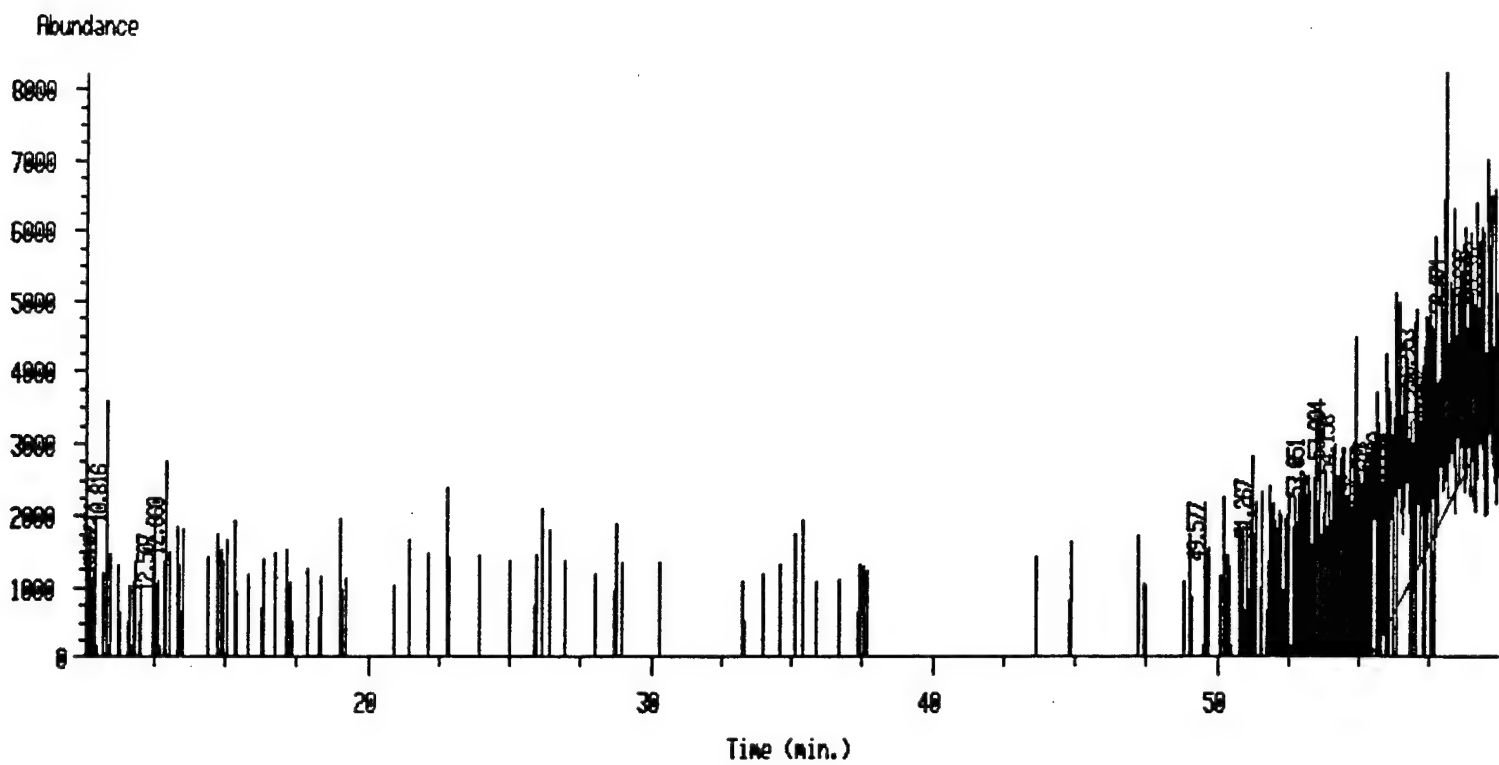
Default Sample Amount: 0

Uncalib. Peak Response Factor: 0

Default Multiplier: 1

Peak Num	Type	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1		BH	13.522	Total Ion	2-Me Quinoline	44429406	9.579 ng/ul
2		BH	14.748	Total Ion	6-Me Quinoline	44751531	9.657 ng/ul
3		BH	15.468	Total Ion	Biphenyl	56051390	9.557 ng/ul
4		PH	16.288	Total Ion	2,6-DiMe Naphthalene	56360816	9.544 ng/ul
5		PH	16.784	Total Ion	1,3-DiMe Naphthalene	56743607	9.534 ng/ul
6		PH	17.920	Total Ion	1,2-DiMe Naphthalene	55588808	9.519 ng/ul
7		BH	21.433	Total Ion	2,3,5-TriMe Naphthal	58007231	9.577 ng/ul
8		PH	21.928	Total Ion	Hexadecane	35957870	9.624 ng/ul
9		PH	22.177	Total Ion	Fluorene	54080548	9.572 ng/ul
10		BH	22.789	Total Ion	4,4'-DiMe Biphenyl	56827341	9.555 ng/ul
11		BH	26.399	Total Ion	1-Me Fluorene	53776980	9.523 ng/ul
12		BH	29.064	Total Ion	Phenanthrene	59543396	9.554 ng/ul
13		VH	29.404	Total Ion	Anthracene	55618119	9.516 ng/ul
14		BH	33.139	Total Ion	2-Me Phenanthrene	55697534	9.400 ng/ul
15		BH	35.154	Total Ion	9-Me Anthracene	54516933	9.402 ng/ul
16		PH	36.607	Total Ion	3,6-DiMe Phenanthren	58728112	9.344 ng/ul
17		VH	36.936	Total Ion	2-Eth Anthracene	55904252	9.408 ng/ul
18		BH	40.768	Total Ion	9,10-DiMe Anthracene	47112365	9.476 ng/ul

TIC of Air0101001.d



External Standard Report

Information from Current Data File Header:

File: /chem/msd.i/air/Air0101001.d

Operator: Kelly Davis

Date Acquired: Tue Nov 07 95 11:22:54 AM

Sample Name: Acetone Blank

Misc Info:

Sequence Index: 1 Bottle Number: 1 Repetition Number: 1

Fog Oil PAH's

Calibration Table Last Updated: Fri Nov 10 13:39:41 1995

Reference Peak Window: 0.200 Absolute Minutes

Non-reference Peak Window: 0.200 Absolute Minutes

Default Sample Amount: 0

Uncalib. Peak Response Factor: 0

Default Multiplier: 1

Peak Num	Int. Type	Ret. Time	Signal Description	Compound Name	Area	Amount
1		-	Total Ion	2-Me Quinoline	-Not Found-	
2		-	Total Ion	6-Me Quinoline	-Not Found-	
3		-	Total Ion	Biphenyl	-Not Found-	
4		-	Total Ion	2,6-DiMe Naphthalene	-Not Found-	
5		-	Total Ion	1,3-DiMe Naphthalene	-Not Found-	
6		-	Total Ion	1,2-DiMe Naphthalene	-Not Found-	
7		-	Total Ion	2,3,5-TriMe Naphthal	-Not Found-	
8		-	Total Ion	Hexadecane	-Not Found-	
9		-	Total Ion	Fluorene	-Not Found-	
10		-	Total Ion	4,4'-DiMe Biphenyl	-Not Found-	
11		-	Total Ion	1-Me Fluorene	-Not Found-	
12		-	Total Ion	Phenanthrene	-Not Found-	
13		-	Total Ion	Anthracene	-Not Found-	
14		-	Total Ion	2-Me Phenanthrene	-Not Found-	
15		-	Total Ion	9-Me Anthracene	-Not Found-	
16		-	Total Ion	3,6-DiMe Phenanthren	-Not Found-	
17		-	Total Ion	2-Eth Anthracene	-Not Found-	
18		-	Total Ion	9,10-DiMe Anthracene	-Not Found-	

*** REPORT ERRORS ***

*** Not All Calibrated Peaks Found ***

Sequence Parameters:

Operator Name: Kelly Davis
Parts of methods to be run: full method
What to do on a barcode mismatch: inject anyway
Data File Prefix: Air
Start Run Counter at: 17
Directory for Data Files: /chem/msd.i/air
Directories for Method Files:
/chem/msd.i

Pre-Sequence Command:
Post-Sequence Command:
Sequence Comment:

Sequence Table:

Seq. Line	Method Name	From Vial	To Vial	Inj/ Vial	Calib Line
1	FogOil.m	17	19	1	

Sample Table:

Vial Num	Sample Name	Sample Amount	Multiplier	Internal Std Amount
1	Acetone Blank			
2	10 ug/mL PAH's			
3	Sample 1			
4	Sample 2			
5	Sample 3			
6	Sample 4			
7	Sample 5			
8	Sample 6			
9	5 ug/mL PAH's			
10	Sample 7			
11	Sample 8			
12	Sample 9			
13	Sample 10			
14	Sample 11			
15	Sample 12			
16	1 ug/mL PAH's			
17	0.5 ug/mL			
18	10 % Fog Oil			
19	0.1 ug/mL			

CHAIN-OF-CUSTODY FORM

REPORT INFORMATION

Customer Name: **3D/ENVIRONMENTAL**
 Address: **781 NEEB ROAD**
 City, State, Zip: **CINCINNATI OHIO 45233**
 Phone: **513-922-8199**
 Fax #: **513-922-9150**
 Project, P.O. #: **ANGELA SCHMIDT**
 Project Name: **FMC-FERGIL**
 Project Manager: **A. Schmidt**
 Copy To: **N/A**

CUSTOMER INFORMATION

ABC/Pan-Ag Labs Job #:

Date Entered on LIMS:

Lab Sample I.D. #

Sampled

Sampled

Time

Sampler:

Client Sample Description

Location/Depth

Sample Type

No. of Containers

TPH-GAS/TEX

TPH-DIESEL

TOTAL VOCs (separate)

SUCCs (in TL)

% Moisture

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FEB 5 1996

BY: [Signature]

PREPRESERVATIVE:

TOXIC?

FLAMMABLE?

EXPLOSIVE?

HIGH LEVELS?

FOR CAM METALS:

STLC

TTL

Company Name

Printed Name

Time

Date

Signature

Relinquished By:

Received By:

Relinquished By:

Received By:

Received for Laboratory By:

Comments:

Standard Turnaround

(10 Working Days)

(TPH, LUFT Samples - 5 Days)

Rush 5 Day

Rush 3 Day

Rush 2 Day

Rush 1 Day

Turnaround Time:

Standard Turnaround

(10 Working Days)

(TPH, LUFT Samples - 5 Days)

Rush 5 Day

Rush 3 Day

Rush 2 Day

Rush 1 Day

Comments:

Standard Turnaround

(10 Working Days)

(TPH, LUFT Samples - 5 Days)

Rush 5 Day

Rush 3 Day

Rush 2 Day

Rush 1 Day

Turnaround Time:

Standard Turnaround

(10 Working Days)

(TPH, LUFT Samples - 5 Days)

Rush 5 Day

Rush 3 Day

Rush 2 Day

Rush 1 Day

Comments:

Standard Turnaround

(10 Working Days)

(TPH, LUFT Samples - 5 Days)

Rush 5 Day

Rush 3 Day

Rush 2 Day

Rush 1 Day

Turnaround Time:

Standard Turnaround

(10 Working Days)

(TPH, LUFT Samples - 5 Days)

Rush 5 Day

Rush 3 Day

Rush 2 Day

Rush 1 Day

Comments:

Standard Turnaround

(10 Working Days)

(TPH, LUFT Samples - 5 Days)

Rush 5 Day

Rush 3 Day

Rush 2 Day

Rush 1 Day

Turnaround Time:

Standard Turnaround

(10 Working Days)

(TPH, LUFT Samples - 5 Days)

Rush 5 Day

Rush 3 Day

Rush 2 Day

Rush 1 Day

Comments:

Standard Turnaround

(10 Working Days)

(TPH, LUFT Samples - 5 Days)

Rush 5 Day

Rush 3 Day

Rush 2 Day

Rush 1 Day

Turnaround Time:

Standard Turnaround

(10 Working Days)

(TPH, LUFT Samples - 5 Days)

Rush 5 Day

Rush 3 Day

Rush 2 Day

Rush 1 Day

Comments:

Standard Turnaround

(10 Working Days)

(TPH, LUFT Samples - 5 Days)

Rush 5 Day

Rush 3 Day

Rush 2 Day

Rush 1 Day

Turnaround Time:

Standard Turnaround

(10 Working Days)

(TPH, LUFT Samples - 5 Days)

Rush 5 Day

Rush 3 Day

Rush 2 Day

Rush 1 Day

Comments:

Standard Turnaround

(10 Working Days)

(TPH, LUFT Samples - 5 Days)

Rush 5 Day

Rush 3 Day

Rush 2 Day

Rush 1 Day

Turnaround Time:

Standard Turnaround

(10 Working Days)

(TPH, LUFT Samples - 5 Days)

Rush 5 Day

Rush 3 Day

Rush 2 Day

Rush 1 Day

Comments:

Standard Turnaround

(10 Working Days)

(TPH, LUFT Samples - 5 Days)

Rush 5 Day

Rush 3 Day

Rush 2 Day

Rush 1 Day

Turnaround Time:

Standard Turnaround

(10 Working Days)

(TPH, LUFT Samples - 5 Days)

Rush 5 Day

Rush 3 Day

Rush 2 Day

Rush 1 Day

Comments:

Standard Turnaround

(10 Working Days)

(TPH, LUFT Samples - 5 Days)

Rush 5 Day

Rush 3 Day

Rush 2 Day

Rush 1 Day

Turnaround Time:

Standard Turnaround

(10 Working Days)

(TPH, LUFT Samples - 5 Days)

Rush 5 Day

Rush 3 Day

Rush 2 Day

Rush 1 Day

Comments:

Standard Turnaround

(10 Working Days)

(TPH, LUFT Samples - 5 Days)

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Rush 3 Day

Rush 2 Day

Rush 1 Day

Turnaround Time:

Standard Turnaround

(10 Working Days)

(TPH, LUFT Samples - 5 Days)

Rush 5 Day

Rush 3 Day

Rush 2 Day

Rush 1 Day

Comments:

Standard Turnaround

(10 Working Days)

(TPH, LUFT Samples - 5 Days)

Rush 5 Day

Rush 3 Day

Rush 2 Day

Rush 1 Day

Turnaround Time:

Standard Turnaround

(10 Working Days)

(TPH, LUFT Samples - 5 Days)

Rush 5 Day

Rush 3 Day

Rush 2 Day

Rush 1 Day

Comments:

Standard Turnaround

(10 Working Days)

(TPH, LUFT Samples - 5 Days)

Rush 5 Day

Rush 3 Day

Rush 2 Day

Rush 1 Day

Turnaround Time:

Standard Turnaround

(10 Working Days)

(TPH, LUFT Samples - 5 Days)

Rush 5 Day

Rush 3 Day

Rush 2 Day

Rush 1 Day

Comments:

Standard Turnaround

(10 Working Days)

(TPH, LUFT Samples - 5 Days)

Rush 5 Day

Rush 3 Day

Rush 2 Day

Rush 1 Day

Turnaround Time:

Standard Turnaround

(10 Working Days)

(TPH, LUFT Samples - 5 Days)

Rush 5 Day

Rush 3 Day

Rush 2 Day

Rush 1 Day

Comments:

Standard Turnaround

(10 Working Days)

(TPH, LUFT Samples - 5 Days)

Rush 5 Day

Rush 3 Day

Rush 2 Day

Rush 1 Day

Turnaround Time:

Standard Turnaround

(10 Working Days)

(TPH, LUFT Samples - 5 Days)

Rush 5 Day

Rush 3 Day

Rush 2 Day

Rush 1 Day

Comments:

Standard Turnaround

(10 Working Days)

(TPH, LUFT Samples - 5 Days)

Rush 5 Day

Rush 3 Day

Rush 2 Day

Rush 1 Day

Turnaround Time:

Standard Turnaround

(10 Working Days)

(TPH, LUFT Samples - 5 Days)

Rush 5 Day

Rush 3 Day

Rush 2 Day

Rush 1 Day

Comments:

Standard Turnaround

(10 Working Days)

(TPH, LUFT Samples - 5 Days)

Rush 5 Day

Rush 3 Day

Rush 2 Day

Rush 1 Day

Turnaround Time:

PREPARATION OF FINAL WORKING STANDARD SOLUTIONS

Compound(s) Hexachloroethane

Primary Std. #(s) NA

Solution Number	Parent Solution Number	Conc. of Parent Solution	Aliquot Volume (mL)	Dilution Volume (mL)	Dilution Solvent	Final Conc.
1. 116198 "F"	"B"	10.0 $\mu\text{g/ml}$	5.00	100	Acetone	0.500 $\mu\text{g/ml}$
2. "G"			1.00			0.100 $\mu\text{g/ml}$
3. "H"			0.100			0.010 $\mu\text{g/ml}$
4. "						
5. 116198 "I"	"C"	0.100 $\mu\text{g/ml}$	5.00	100	Iso Octane	0.005 $\mu\text{g/ml}$
6. "J"	"B"	10.0 $\mu\text{g/ml}$	0.200 0.100			0.020 $\mu\text{g/ml}$
7. "K"	"I"	0.005 $\mu\text{g/ml}$	10.0			0.0005 $\mu\text{g/ml}$
8. "L"	"E" "H"	0.010 $\mu\text{g/ml}$	10.0			0.001 $\mu\text{g/ml}$
9. "						
10. "						
11. "						
12. ⑤ JG 28 Sep 95						

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FEB 5 1996

by Wally V. Davis

Comments: This dilution was added on 28 Sep 95, the expiration date is still 21 Aug 96. JG 28 Sep 95

Dilution Solvent Iso Octane
Acetone
 Storage Condition/and Location: Refrigerate MAT ID: 1625-635

Lot Number
BT 524
BK 896

Dilutions by: James Grant Date: 13 Sep 95

Checked by: Wally V. Davis Date: 30 Jan 96

Approved by: Wally V. Davis Date: 30 Jan 96

Expiration: 8/21/96

ABC Laboratories Inc. Form ABC-13 (04-08-94)

PREPARATION OF FINAL WORKING STANDARD SOLUTIONS

Compound(s) <u>Hexachloroethane</u>		Primary Std. #s) <u>N/A</u>				
Solution Number	Parent Solution Number	Conc. of Parent Solution	Aliquot Volume (mL)	Dilution Volume (mL)	Dilution Solvent	Final Conc.
1. <u>16198</u>	<u>"A"</u>	<u>1200 µg/mL</u>	<u>83.0</u>	<u>100</u>	<u>hexane</u>	<u>1000 µg/mL</u>
2. <u>"B"</u>	<u>"A"</u>	<u>1000</u>	<u>1.00</u>	<u>1</u>	<u>hexane</u>	<u>10.0 µg/mL</u>
3. <u>"C"</u>	<u>"B"</u>	<u>10.0</u>	<u>1.00</u>	<u>1</u>	<u>hexane</u>	<u>0.100 µg/mL</u>
4. <u>"D"</u>	<u>↓</u>	<u>↓</u>	<u>0.500</u>	<u>↓</u>	<u>hexane</u>	<u>0.0500 µg/mL</u>
5. <u>"E"</u>	<u>"C"</u>	<u>0.100</u>	<u>10.0</u>	<u>↓</u>	<u>hexane</u>	<u>0.0100 µg/mL</u>
6. <u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
7. <u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
8. <u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
9. <u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
10. <u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
11. <u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
12. <u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>

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BY Kelly V. Davis

Comments:	Dilution Solvent <u>hexane</u>	Lot Number <u>B1524</u>
Dilutions by: <u>Kelly V. Davis</u>	Date: <u>21 Aug 95</u>	Storage Condition/and Location: <u>0-6°C</u>
Checked by: <u>James Brent</u>	Date: <u>30 Jan 96</u>	
Approved by: <u>Kelly V. Davis</u>	Date: <u>30 Jan 96</u>	Expiration: <u>8/12/96</u>

ABC Laboratories, Inc.

PREPARATION OF CONCENTRATED STOCK STANDARDS

No.: 16198 Compound: Hexachloroethane
Primary Standard No.: N/A Lot No.: 06203HF Purity: 99.9%
Final Gross Wt.: 65.2917 g Dilution Volume: 100 ml
Tare Wt.: 65.16700 g Dilution Solvent: i-octane
Net Wt.: 0.1247 g Concentration: 1.20 mg/mL
Adj. Net Wt.: 180 mg

Balance Check

Material I.D. No.: 1714-145A

Class S.
Weight Added

Before
Standard Weighing After
Standard Weighing

100 g

100.0015 g

100.004 g

100 g + 0.1 g

100.1016 g

100.1014 g

2 g

2.0000 g

1.9999 g

0.1 g

0.1001 g

0.0999 g

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FEB 5 1996

BY Kelly R. Davis

Solution Information

Expiration Date: 8-21-96

Storage Instructions: 0-6°C

Storage Unit Material Control Number:

Comments: (1) (1) Kd 8-21-95 (2) Three significant figures are used in calculations

purity though only 2 are given for purity. Kd 8-21-95

(3) (1) 1-30-96

Prepared by: Kelly R. Davis

Date: 8-21-95

Checked by: Joann Grant

Date: 30 Jan 96

Lab Form No.: 164a (04/07/94)

PREPARATION OF FINAL WORKING STANDARD SOLUTIONS

Compound(s) Varies

Primary Std. #(s) NA

Solution Number	Parent Solution Number	Conc. of Parent Solution	Aliquot Volume (mL)	Dilution Volume (mL)	Dilution Solvent	Final Conc.
1. <u>C</u>	<u>A</u>	<u>50.0 μg/ml</u>	<u>10.0</u>	<u>100</u>	<u>Iso-octane</u>	<u>5.00 μg/ml</u>
2. <u>D</u>	<u>A</u>	<u>↓</u>	<u>2.00</u>			<u>1.00 μg/ml</u>
3. <u>E</u>	<u>A</u>	<u>↓</u>	<u>1.00</u>			<u>0.50 μg/ml</u>
4. <u>F</u>	<u>B</u>	<u>10.0 μg/ml</u>	<u>1.00</u>		<u>↓</u>	<u>0.10 μg/ml</u> ②
5. <u>G</u>	<u>A</u>	<u>50.0 μg/ml</u>	<u>20.0</u>		<u>Acetone</u>	<u>10.0 μg/ml</u> ②
6. <u>H</u>	<u>A</u>	<u>↓</u>	<u>2.00</u>			<u>1.00 μg/ml</u> ②
7. <u>I</u>	<u>B</u>	<u>10.0 μg/ml</u>	<u>1.00</u>	<u>↓</u>		<u>0.10 μg/ml</u> ②
8. _____						
9. _____						
10. _____						

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FEB 5 1996

② This dilution was added on 30 Jan 96 expiration date is still 30 Aug 96. JCG 31 Aug 95

Comments: ① JCG 30 Aug 95

Dilutions by: Jeanne Grant Date: 230 Aug 95
 Checked by: Kelly T. Davis Date: 30 Jan 96
 Approved by: Kelly T. Davis Date: 30 Jan 96 Expiration: 8/30/96

Dilution Solvent: Iso-octane
Acetone
 Lot Number: 81524
BK 896
 Storage Condition/and Location: Refrigerate MAT ID: 1625-635

Observations and/or Remarks Form

Test Material: Fog Oil

Lab Form No. 72

Sample Type: Varies

ABC Laboratories, Inc.
7200 E. ABC Lane
Columbia, MO 65202-8015

ABC Study No.: 42818

Principal

Investigator: Kelly V. Davis

Comments

The 50.0 µg/ml standard (std. mix A) was prepared by taking a 5.0 mL aliquot from each of the 1.0 mg/ml standard solutions of the compounds listed below and adding them to a single 100-mL volumetric flask. The 10.0 µg/ml standard (std. mix B) was prepared by taking a 1.0 mL aliquot from each of the 1.0 mg/ml standard solutions of the compounds listed below and adding them to a single 100-mL volumetric flask. The dilution solvent in each flask was Iso-Octane. These standards were stored in a refrigerator.

2-Methyquinoline
6-Methylquinoline
Biphenyl
2,6-Dimethylnaphthalene
1,3-Dimethylnaphthalene
1,2-Dimethylnaphthalene
2,3,5-Trimethylnaphthalene
Hexadecane
Fluorene
4,4'-Dimethylbiphenyl
1-Methylfluorene
Phenanthrene
Anthracene
2-Methylphenanthrene
9-Methylanthracene
3,6-Dimethylphenanthrene
2-Ethylanthracene
9,10-Dimethylanthracene

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THE ORIGINAL "DOCUMENT"

FEB 5 1996

BY Kelly V. Davis

Prepared By: Jeanne Grant

Date: 30 Jan 96

Checked By: Kelly V. Davis

Date: 30 Jan 96

Observations and/or Remarks Form

Test Material: Fog Oil

Lab Form No. 72

Sample Type: Varies

ABC Laboratories, Inc.
7200 E. ABC Lane
Columbia, MO 65202-8015

ABC Study No.: 42818

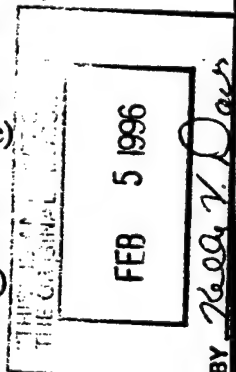
Principal

Investigator: Kelly V. Davis

Comments

The following compounds were weighed to four decimal places on an analytical balance, MAT ID# 1714-145A. Each compound was weighed into a separate volumetric flask. A correction for purity was made. The amount weighed, the purity, the final volume, and the solvent used are listed after each compound. The nominal concentration for each standard solution is 1.0 mg/ml.

2-Methylquinoline	(0.1003g, 100%, 100 mL, Iso-Octane)
6-Methylquinoline	(0.1023g, 98%, 100 mL, Iso-Octane)
Biphenyl	(0.1003g, 100%, 100 mL, Diethyl Ether)
2,6-Dimethylnaphthalene	(0.1011g, 99%, 100 mL, Iso-Octane)
1,3-Dimethylnaphthalene	(0.1043g, 96%, 100 mL, Iso-Octane)
1,2-Dimethylnaphthalene	(0.1056g, 95%, 100 mL, Iso-Octane)
2,3,5-Trimethylnaphthalene	(0.0511g, 98%, 50.0 mL, Iso-Octane)
Hexadecane	(0.1003g, 100%, 100 mL, Diethyl Ether)
Fluorene	(0.1020g, 98%, 100 mL, Iso-Octane)
4,4'-Dimethylphene	(0.1033g, 97%, 100 mL, Iso-Octane)
1-Methylfluorene	(0.1011g, 99%, 100 mL, Iso-Octane)
Phenanthrene	(0.1002g, 100%, 100 mL, Iso-Octane)
Anthracene	(0.1003g, 100%, 100 mL, Acetone)
2-Methylphenanthrene	(0.1056g, 95%, 100 mL, Iso-Octane)
9-Methylanthracene	(0.1021g, 98%, 100 mL, Iso-Octane)
3,6-Dimethylphenanthrene	(0.0515g, 97%, 50.0 mL, Iso-Octane)
2-Ethylanthracene	(0.1020g, 98%, 100 mL, Iso-Octane)
9,10-Dimethylanthracene	(0.1010g, 99%, 100 mL, Iso-Octane)



Prepared By: Jean Brant

Date: 30 Jan 96

Checked By: Kelly V. Davis

Date: 30 Jan 96

Appendix F

Fog Oil Smoke Sample Information and Analysis

FORT McCLELLAN INSECT COLLECTION DATA

Name: _____ Date: _____

Project Name/No.: Fort McClellan: 7322.19

Collection Location: County: _____ State: Alabama

Quadrangle: _____

UTM Zone: 16

Easting: _____

Northing: _____

Trap Type: _____

Trap Deployment Date: _____ Time (military): _____

Trap Collection: Date: _____ Time (military): _____

Habitat Description: _____

General Weather Description During Trapping Period:

Sample Number: _____ Weight of insects in sample _____

Time sample placed on ice for anesthesia: from _____ h _____ h

Time sample placed on dry ice in cooler and sent to lab: _____ h

FORT McCLELLAN WEATHER DATA

Date: _____ **Initials:** _____ **Project #:** 7322.19

Net location: County: _____

Quadrangle: _____

Site description:

[illegible]

FORT McCLELLAN TISSUE SAMPLE DATA

Project # 7322.19 Date: _____ Initials: _____

Organism: _____ Type of tissue: _____

Sample number: _____

Description of site where organism was caught: _____

County: _____ State: Alabama

Site name: _____

Capture method: _____

Time of capture: _____

Weight of organism: _____

Weight of tissue: _____

Length of time on ice for anesthesia: _____

Time and date samples placed on dry ice for shipment to lab _____

Comments: _____

FORT McCLELLAN NET SITE DESCRIPTION

Project Number: 7322.19 Date: _____

County: _____ Name: _____

Quad: _____ Stream/Drainage: _____

UTM Zone: _____

Easting: _____

Northing: _____

Comments: _____

STREAM:

Bank Height:

Channel Width:

Stream Width:

Substratum:

Average Water Depth:

Turbidity:

Canopy Closure:

VEGETATION:

Dominant canopy species:

Average canopy DBH:

Dominant understory species:

Average understory DBH:

Herbaceous species:

Project number 7322.19 _____ Date: _____ Initials: _____ Page _____ of _____

Net Location: County, _____, State: Alabama (To make comments on reverse, please refer to capture number)

Quadrangle: _____ **Site Name:** _____

Net size: _____ **Net Number:** _____

Site Description/Comments:

[illegible]

Appendix E

Field Data Sheets

TABLE D-4. Insect orders and amounts caught at Choccolocco reference site.

Black Light			White Light			Total		
Order	Number		Order	Number		Order	Number	
Homoptera	1		Homoptera	23		Homoptera	24	
Trichoptera	39		Trichoptera	53		Trichoptera	92	
Hymenoptera	2		Hymenoptera	0		Hymenoptera	2	
Hemiptera	5		Hemiptera	5		Hemiptera	10	
Dermaptera	3		Dermaptera	0		Dermaptera	3	
Lepidoptera	26		Lepidoptera	45		Lepidoptera	71	
Coleoptera	507		Coleoptera	112		Coleoptera	619	
Neuroptera	1		Neuroptera	1		Neuroptera	2	
Psocoptera	0		Psocoptera	0		Psocoptera	0	
Orthoptera	1		Orthoptera	1		Orthoptera	2	
Diptera	18		Diptera	65		Diptera	83	
Ephemeroptera	5		Ephemeroptera	35		Ephemeroptera	40	
Total	608			340			948	
No. Orders	11			9			11	
						Diversity	7.452064	
						Evenness	3.107752	

TABLE D-3. Insect orders and amounts caught at Battle Drill Area.

Black Light			White Light			Total		
Order	Number		Order	Number		Order	Number	
Homoptera	2		Homoptera	3		Homoptera	5	
Trichoptera	31		Trichoptera	8		Trichoptera	39	
Hymenoptera	2		Hymenoptera	0		Hymenoptera	2	
Hemiptera	1		Hemiptera	6		Hemiptera	7	
Dermaptera	0		Dermaptera	0		Dermaptera	0	
Lepidoptera	14		Lepidoptera	28		Lepidoptera	42	
Coleoptera	55		Coleoptera	25		Coleoptera	80	
Neuroptera	3		Neuroptera	0		Neuroptera	3	
Psocoptera	0		Psocoptera	0		Psocoptera	0	
Orthoptera	0		Orthoptera	0		Orthoptera	0	
Diptera	0		Diptera	0		Diptera	0	
Ephemeroptera	0		Ephemeroptera	1		Ephemeroptera	1	
Total	108			71			179	
No.	7			6			8	
Orders								
						Diversity	5.8417	
						Evenness	2.8093	

TABLE D-2. Insect orders and amounts caught at Range 56.

Black Light			White Light			Total		
Order	Number		Order	Number		Order	Number	
Homoptera	0		Homoptera	6		Homoptera	6	
Trichoptera	9		Trichoptera	2		Trichoptera	11	
Hymenoptera	11		Hymenoptera	21		Hymenoptera	32	
Hemiptera	17		Hemiptera	11		Hemiptera	28	
Dermoptera	0		Dermoptera	0		Dermoptera	0	
Lepidoptera	15		Lepidoptera	56		Lepidoptera	71	
Coleoptera	56		Coleoptera	78		Coleoptera	134	
Neuroptera	0		Neuroptera	1		Neuroptera	1	
Psocoptera	0		Psocoptera	0		Psocoptera	0	
Orthoptera	0		Orthoptera	1		Orthoptera	1	
Diptera	0		Diptera	3		Diptera	3	
Ephemeroptera	0		Ephemeroptera	0		Ephemeroptera	0	
Total	108			179			287	
No.	5			9			9	
Orders						Diversity	6.3435	
						Evenness	2.8871	

TABLE D-1. Insect orders and amounts caught at Range 24 A.

Black Light			White Light			Total		
Order	Number		Order	Number		Order	Number	
Homoptera	2		Homoptera	11		Homoptera	13	
Trichoptera	3		Trichoptera	3		Trichoptera	6	
Hymenoptera	5		Hymenoptera	3		Hymenoptera	8	
Hemiptera	10		Hemiptera	8		Hemiptera	18	
Dermoptera	2		Dermoptera	0		Dermoptera	2	
Lepidoptera	28		Lepidoptera	100		Lepidoptera	128	
Coleoptera	47		Coleoptera	44		Coleoptera	91	
Neuroptera	0		Neuroptera	2		Neuroptera	2	
Psocoptera	0		Psocoptera	2		Psocoptera	2	
Orthoptera	0		Orthoptera	1		Orthoptera	1	
Diptera	0		Diptera	14		Diptera	14	
Ephemeroptera	0		Ephemeroptera	0		Ephemeroptera	0	
Total	97			188			285	
No.	7			10			11	
Orders								
						Diversity	6.3484	
						Evenness	2.6475	

Appendix D

Insect Analysis and Results

TABLE C-8. Species of trees and shrubs along transect 2 at Choccolocco Creek. Diameter at breast height (dbh), and height of trees are provided.

Species	Transect	dbh (cm)	Height (m)
American Beech	2	18.1	10
American Beech	2	< 1.0	2
American Elm	2	4.3	2
American Elm	2	9.5	5
American Elm	2	6.9	4
American Elm	2	5.8	3
Bitternut Hickory	2	0.5	2
Boxelder	2	1.0	2
Boxelder	2	2.8	3
Boxelder	2	6.9	3
Boxelder	2	1.5	2
Boxelder	2	4.1	2
Boxelder	2	34.2	8
Green Ash	2	1.8	3
Green Ash	2	1.5	2
Green Ash	2	49.6	16
Privet	2	2.0	3
Red Maple	2	1.0	4
Sweet Gum	2	26.8	8
Sweet Gum	2	6.8	7
Sweet Gum	2	6.7	7
Sweet Gum	2	9.5	4
Sweet Gum(dead)	2	22.5	7
Sweet Gum(dead)	2	18.9	5
Tulip Poplar	2	44.4	20
Tulip Poplar	2	45.0	15
Tulip Poplar	2	51.0	20

TABLE C-7. Species of trees and shrubs along transect 1 at Choccolocco Creek.
Diameter at breast height (dbh), and height of trees are provided.

Species	Transect	dbh (cm)	Height (m)
American Elm	1	8.5	7
American Elm	1	9.0	5
American Elm	1	6.0	3
Green Ash	1	13.1	8
Green Ash	1	20.2	13
Honeysuckle	1	4.1	3
Honeysuckle	1	2.0	2
Honeysuckle	1	2.5	2
Honeysuckle	1	2.0	2
Honeysuckle	1	< 1.0	2
Honeysuckle	1	1.0	2
Honeysuckle	1	1.0	2
Longleaf Pine	1	53.1	18
Musclewood	1	4.3	3
Red Maple	1	4.3	5
Red Maple	1	2.7	2
Red Maple	1	1.0	2
Red Maple	1	13.3	7
Red Maple	1	6.6	3
Sweet Gum	1	27.8	16
Sweet Gum	1	23.7	11
Sweet Gum	1	39.5	3
Sweet Gum	1	11.0	11
Sweet Gum	1	14.7	15
Sweet Gum	1	9.8	8
Sweet Gum	1	32.1	16
Sweet Gum	1	14.8	13
Sweet Gum	1	8.9	5
Sweet Gum	1	20.0	11
Sweet Gum	1	28.1	13
Sweet Gum	1	19.0	10
Sweet Gum	1	12.2	8
Tulip Poplar	1	25.9	13
Tulip Poplar	1	29.3	11
Water Oak	1	35.3	11
Water Oak	1	44.8	13

TABLE C-6. Species of trees and shrubs along transect 2 at Battle Drill Area. Diameter at breast height (dbh), and height of trees are provided.

Species	Transect	dbh (cm)	Height (m)
Green Ash	2	1.0	3
Loblolly Pine	2	30.8	10
Mockernut Hickory	2	3.4	3
Post Oak	2	5.1	4
Red Maple	2	3.0	6
Sweet Gum	2	1.0	2
Sweet Gum	2	1.0	2
Sweet Gum	2	2.3	3
Sweet Gum	2	5.4	3
Sweet Gum	2	2.2	3
Sweet Gum	2	4.1	4
Sweet Gum	2	4.5	4
Sweet Gum	2	6.1	5
Sweet Gum	2	3.6	3
Sweet Gum	2	3.0	3
Sweet Gum	2	2.7	2
Sweet Gum	2	4.5	3
Sweet Gum	2	5.1	7
Sweet Gum	2	3.1	6
Sweet Gum	2	1.0	2
Sweet Gum	2	2.7	3
Sweet Gum	2	<1.0	2
Sweet Gum	2	<1.0	2
Sweet Gum	2	<1.0	2
Sweet Gum	2	<1.0	2
Sweet Gum	2	8.2	6
Sweet Gum	2	5.2	5
Sweet Gum	2	<1.0	2
Sweet Gum	2	<1.0	3
Sweet Gum	2	7.4	5
Water Oak	2	32.2	13
Water Oak	2	12.7	8
Water Oak	2	15.1	8
Winged Elm	2	1.0	3
Winged Elm	2	<1.0	2

TABLE C-5. Species of trees and shrubs along transect 1 at Battle Drill Area. Diameter at breast height (dbh), and height of trees are provided.

Species	Transect	dbh (cm)	Height (m)
American Plum	1	7.7	5
American Plum	1	4.6	5
American Plum	1	3.2	3
American Plum	1	7.5	5
Bitternut Hickory	1	3.1	3
Bitternut Hickory	1	12.1	8
Bitternut Hickory	1	5.6	6
Black Cherry	1	8.3	5
Boxelder	1	1.4	3
Boxelder	1	1.0	2
Boxelder	1	9.9	7
Boxelder	1	5.2	5
Green Ash	1	22.5	10
Green Ash	1	21.2	11
Green Ash	1	2.2	5
Green Ash	1	5.9	6
Green Ash	1	4.8	3
Ironwood	1	10.5	6
Loblolly Pine	1	32.5	12
Loblolly Pine	1	26.2	11
Loblolly Pine	1	22.6	11
Loblolly Pine	1	10.3	6
Musclewood	1	2.5	3
Musclewood	1	1.0	2
Sweet Gum	1	1.8	3
Sweet Gum	1	9.5	10
Sweet Gum	1	12.9	10
Tulip Poplar	1	8.8	5
Tulip Poplar	1	18.2	7
Tulip Poplar	1	22.8	8
Unknown (dead)	1	12.9	4
Water Oak	1	8.0	5
Water Oak	1	6.8	5
Water Oak	1	4.7	5
Winged Elm	1	7.3	4
Winged Sumac	1	3.5	3

TABLE C-4. Species of trees and shrubs along transect 2 at Range 56. Diameter at breast height (dbh), and height of trees are provided.

Species	Transect	dbh (cm)	Height (m)
American Elm	2	16.5	7
American Elm	2	11.1	5
Basswood	2	13.9	11
Basswood	2	18.2	7
Basswood	2	15.5	5
Boxelder	2	14.2	7
Boxelder	2	70.0	10
Boxelder	2	19.0	7
Elderberry	2	<1.0	3
Elderberry	2	<1.0	2
Elderberry	2	<1.0	2
Elderberry	2	<1.0	3
Flowering Dogwood	2	2.2	3
Flowering Dogwood	2	4.6	3
Hackberry	2	8.9	4
Mockernut Hickory	2	<1.0	2
Paw Paw	2	<1.0	2
Paw Paw	2	2.5	3
Paw Paw	2	<1.0	3
Paw Paw	2	<1.0	2
Paw Paw	2	<1.0	2
Paw Paw	2	1.5	3
Paw Paw	2	2.0	3
Paw Paw	2	3.0	3
Paw Paw	2	<1.0	3
Paw Paw	2	<1.0	2
Privet	2	<1.0	2
Privet	2	<1.0	2
Privet	2	<1.0	3
Privet	2	<1.0	3
Privet	2	<1.0	2
Redbud	2	2.8	2
Redbud	2	1.0	3
Redbud	2	<1.0	2
Redbud	2	1.5	3
Tulip Poplar	2	6.3	3
Water Oak	2	1.5	3
Water Oak	2	1.0	2
Water Oak	2	52.7	13
Water Oak	2	41.0	15
Winged Elm	2	<1.0	2

TABLE C-3. Continued.

Species	Transect	dbh (cm)	Height(m)
Privet	1	1.5	3
Redbud	1	1.0	2
Redbud	1	1.6	3
Redbud	1	1.0	3
Redbud	1	2.9	3
Slippery Elm	1	2.2	2
Sweet Gum	1	11.2	8
Tulip Poplar	1	<1.0	2
Winged Elm	1	<1.0	2
Winged Elm	1	<1.0	2
Winged	1	<1.0	2
Sumac			

TABLE C-3. Species of trees and shrubs along transect 1 at Range 56. Diameter at breast height (dbh), and height of trees also are given.

Species	Transect	dbh (cm)	Height(m)
Boxelder	1	<1.0	2
Elderberry	1	<1.0	2
Green Ash	1	1.0	2
Green Ash	1	2.3	3
Green Ash	1	<1.0	2
Green Ash	1	<1.0	2
Loblolly Pine	1	13.4	10
Loblolly Pine	1	23.2	13
Loblolly Pine	1	24.9	13
Loblolly Pine	1	19.2	11
Loblolly Pine	1	26.4	11
Loblolly Pine	1	20.1	11
Loblolly Pine	1	27.6	7
Loblolly Pine	1	27.7	11
Loblolly Pine	1	22.9	13
Loblolly Pine	1	26.6	15
Loblolly Pine	1	19.8	11
Loblolly Pine	1	24.4	13
Loblolly Pine	1	15.4	10
Loblolly Pine	1	9.6	3
Loblolly Pine	1	11.4	8
Loblolly Pine	1	12.9	8
Loblolly Pine	1	16.6	8
Loblolly Pine	1	14.6	9
Loblolly Pine	1	22.0	10
Loblolly Pine	1	8.3	8
Loblolly Pine	1	11.0	7
Loblolly Pine	1	13.7	8
Loblolly Pine	1	8.7	7
Loblolly Pine	1	7.8	7
Loblolly Pine	1	22.6	11
Loblolly Pine	1	7.6	7
Loblolly Pine	1	23.3	11
Loblolly Pine	1	8.7	8
Loblolly Pine	1	16.9	11
Loblolly Pine	1	20.2	10
Loblolly Pine	1	19.1	10
Loblolly Pine (dead)	1	17.2	7
Loblolly Pine (dead)	1	15.8	5
Loblolly Pine (dead)	1	12.8	3
Loblolly Pine (dead)	1	6.0	5
Loblolly Pine (dead)	1	10.3	5
Loblolly Pine (dead)	1	6.8	5
Loblolly Pine (dead)	1	17.7	3
Privet	1	<1.0	2

TABLE C-2. Continued.

Species	Transect	dbh (cm)	Height (m)
Pignut Hickory	2	< 1.0	2
Pignut Hickory	2	1.0	2
Pignut Hickory	2	2.0	2
Post Oak	2	17.7	13
Post Oak	2	3.7	4
Post Oak	2	27.4	11
Red Oak	2	9.4	8
Red Oak	2	2.0	2
Red Oak	2	10.0	8
Red Oak	2	1.0	2
Red Oak	2	1.5	2
Red Oak	2	1.5	2
Red Oak	2	2.0	3
Red Oak	2	3.6	4
Shagbark Hickory	2	2.5	4
Sourwood	2	2.9	3
Sourwood	2	4.9	4
Sourwood	2	10.8	7
Sourwood	2	2.5	3
Sourwood	2	3.2	4
Tulip Poplar	2	4.3	5
Virginia Pine	2	1.0	2
White Oak	2	12.8	11
White Oak	2	6.6	5
White Oak	2	12.8	7
White Oak	2	3.1	3
White Oak	2	18.4	10
White Oak	2	1.0	2
White Oak	2	3.8	3

TABLE C-2. Species of trees and shrubs along transect 2 at Range 24 A. Diameter at breast height (dbh), and height of trees are provided.

Species	Transect	dbh (cm)	Height (m)
Basket Oak	2	8.5	7
Basket Oak	2	41.6	25
Blackjack Oak	2	< 1.0	2
Blackjack Oak	2	4.3	3
Blackjack Oak	2	2.0	3
Blackjack Oak	2	2.7	3
Blackjack Oak	2	2.0	2
Flowering Dogwood	2	1.0	2
Flowering Dogwood	2	10	7
Flowering Dogwood	2	1.7	2
Flowering Dogwood	2	6.6	5
Flowering Dogwood	2	1.7	2
Flowering Dogwood	2	2.0	2
Longleaf Pine	2	18.2	11
Longleaf Pine	2	14.7	11
Longleaf Pine	2	13.9	13
Longleaf Pine	2	8.4	7
Longleaf Pine	2	3.2	2
Longleaf Pine	2	1.0	2
Longleaf Pine	2	10.7	7
Mockernut Hickory	2	1.0	3
Persimmon	2	3.0	4
Persimmon	2	1.0	3
Persimmon	2	2.1	2
Persimmon	2	1.8	2
Persimmon	2	< 1.0	2
Persimmon	2	1.7	2
Persimmon	2	< 1.0	2
Persimmon	2	1.4	3
Persimmon	2	1.5	3
Persimmon	2	2.0	2
Persimmon	2	1.0	3
Persimmon	2	1.5	3
Persimmon	2	2.6	3
Persimmon	2	2.0	3
Persimmon	2	< 1.0	2
Persimmon	2	< 1.0	2
Persimmon	2	< 1.0	2
Persimmon	2	1.2	2
Persimmon	2	2.6	2
Persimmon	2	1.5	3
Persimmon	2	1.2	3
Persimmon	2	1.5	3
Pignut Hickory	2	1.7	3

TABLE C -1. Continued.

Species	Transect	dbh (cm)	Height (m)
Pignut Hickory	1	2.8	3
Post Oak	1	17.9	13
Red Maple	1	1.5	3
Red Maple	1	2.0	2
Red Maple	1	< 1.0	2
Red Maple	1	1.2	3
Red Maple	1	2.5	4
Red Maple	1	4.5	5
Red Maple	1	1.5	3
Sourwood	1	2.2	3
Virginia Pine	1	1.2	3
White Oak	1	1.0	3
Winged Sumac	1	2.0	2
Winged Sumac	1	1.0	3
Winged Sumac	1	1.3	2

TABLE C -1. Species of trees and shrubs along transect 1 at Range 24 A.
Diameter at breast height (dbh), and height of trees are provided.

Species	Transect	dbh (cm)	Height (m)
Black Oak	1	40.6	18
Black Oak	1	1.5	2
Black Oak	1	1.5	3
Black Oak	1	1.8	3
Black Oak	1	14	11
Blackjack Oak	1	2.5	2
Blackjack Oak	1	2.5	2
Blackjack Oak	1	13.7	11
Blackjack Oak	1	2.5	4
Blackjack Oak	1	1.8	3
Flowering Dogwood	1	1.5	2
Hazel Alder	1	3.1	5
Hazel Alder	1	2.5	3
Hazel Alder	1	< 1.0	2
Hazel Alder	1	< 1.0	2
Longleaf Pine	1	3.7	3
Longleaf Pine	1	2.5	3
Longleaf Pine	1	2.0	3
Longleaf Pine	1	1.9	3
Longleaf Pine	1	3.0	3
Longleaf Pine	1	8.4	7
Longleaf Pine	1	31.1	16
Longleaf Pine	1	8.3	8
Longleaf Pine	1	5.2	5
Mockernut Hickory	1	1.5	2
Mockernut Hickory	1	1.2	2
Mockernut Hickory	1	1.0	2
Persimmon	1	1.8	2
Persimmon	1	2.0	3
Persimmon	1	1.2	2
Persimmon	1	1.8	3
Persimmon	1	2.2	3
Persimmon	1	1.1	3
Persimmon	1	1.5	3
Pignut Hickory	1	1.8	2
Pignut Hickory	1	1.0	3
Pignut Hickory	1	1.0	2
Pignut Hickory	1	1.0	3
Pignut Hickory	1	1.5	3
Pignut Hickory	1	1.3	3
Pignut Hickory	1	< 1.0	2
Pignut Hickory	1	< 1.0	2
Pignut Hickory	1	1.0	3

Appendix C

Species of Trees and Shrubs at each Sample Site

TABLE B-4. Characteristics of water and sediment samples collected at Choccolocco Creek. Water temperature, dissolved oxygen, pH, conductivity (TDS), and turbidity are presented.

	Sample Location										
	1	2	3	4	5	6	7	7-dup ¹	8	9	10
Surface water											
sample number	SW4-1	SW4-2	SW4-3	SW4-4	SW4-5	SW4-6	SW4-7	SW4-7 dup-7	SW4-8	SW4-9	SW4-10
Serial #	334398	352196	334395	334388/9	334397	334384	334392	334378	334393	334343	334394
Stream width (m)	6.6	6.6	13.3	13.3	10	6.6	10	10	5	8.3	13.3
Stream depth (m)	0.55	1.15	0.3	0.75	0.7	0.6	0.7	0.7	0.325	0.45	0.275
Sample depth (m)	0.4	0.9	0.15	0.4	0.35	0.35	0.45	0.45	0.15	0.2	0.15
Temperature (C)	25	26	26	26	26	26	26	26	26	27	27
pH	7.7	7.9	7.8	7.9	7.9	7.8	7.8	7.8	7.8	7.9	7.9
DO ₂ ppm	4	5	6	7	5	7	7	5	6	6	7
Total dissolved solids	40	50	40	40	40	40	40	40	40	40	40
Hardness mg/L	58	60	56	54	52	60	54	54	56	60	
Turbidity	medium	medium	low	medium	med-low	low	med-low	med-low	low	low	low
Sediment sample											
number	SD4-1	SD4-2	SD4-3	SD4-4	SD4-5	SD4-6	SD4-7	SD4-7 dup-7	SD4-8	SD4-9	SD4-10
Sediment type	mud, sand	mud	mud, silt	mud, sand	silt, gravel	gravel, sand	silt, sand	silt, sand	gravel, mud	mud, sand	large gravel

¹: dup refers to a replicate sample.

TABLE B-3. Characteristics of water and sediment samples collected at Range 56. Water temperature, dissolved oxygen, pH, conductivity (TDS), and turbidity are presented.

	Sample Location										
	1	2	3	4	5	6	7	8	9	10	10-dup ¹
Surface water											
sample number	SW3-1	SW3-2	SW3-3	SW3-4	SW3-5	SW3-6	SW3-7	SW3-8	SW3-9	SW3-10	SW3-10-dup-10
Serial #	352200	352195	352199	334403	352194	352191	352189	352190	5119010	352193	352198
Stream width (m)	13.3	16.6	13.3	20		16.6	20	20	6.6	10	10
Stream depth (m)	0.5	0.4	0.3	0.4	0.6	0.5	0.2	0.45	0.6	0.475	0.475
Sample depth (m)	0.3	0.2	0.2	0.25	0.3	0.35	0.1	0.25	0.35	0.25	0.25
Temperature (C)	24	24	25	27	26	26	25	26	25	25	25
pH	8.1	8.2	8.4	8.3	8.3	8	8	8.2	8.2	8.3	8.3
DO ₂ ppm	7	7	8	7	6	8	10	7	8	8	8
Total dissolved solids	80	90	90	80	80	80	80	80	80	80	90
Hardness mg/L	113	114	126	114	118	126	116	128	120	122	122
Turbidity	high	medium	medium	high	high	medium	low	medium	medium	medium	medium
Sediment sample number	SD3-1	SD3-2	SD3-3	SD3-4	SD3-5	SD3-6	SD3-7	SD3-8	SD3-9	SD3-10	SD3-10-dup-10
Sediment type	mud, silt	mud, muck	mud, muck	mud, muck	mud, muck	rocks	rocks, gravel	rocks, silt	bedrock, sand	gravel, bedrock	gravel, bedrock

¹: dup refers to a replicate sample.

TABLE B-2. Characteristics of water and sediment samples collected at Range 24A. Water temperature, dissolved oxygen, pH, conductivity (TDS), and turbidity are presented.

	Sample Location		
	1	2	3
Surface water			
sample number	SW1-1	SW1-2	SW1-3
Serial #	352188	334359	334382
Stream width (m)	1.1	1.2	0.6
Stream depth (m)	0.2	0.2	0.175
Sample depth (m)	0.1	0.1	0
Temperature (C)	26	28	22
pH	7.6	7.7	6.4
DO₂ ppm	6	6	5
Total Dissolved			
Solids	10	20	0
Hardness mg/L	10	20	6
Turbidity	clear	clear	clear
Sediment Sample			
number	SD1-1	SD1-2	SD1-3
	rock,		
	gravel,	rock, silt,	orange
Sediment type	detritus	gravel	precipitate

TABLE B-1. Characteristics of water and sediment samples collected at Battle Drill Area. Water temperature, dissolved oxygen, pH, conductivity (TDS), and turbidity are presented.

	Sample Location										
	1	2	3	4	5	6	7	8	9	10	10-dup ¹
Surface water											
sample number	SW2-1	SW2-2	SW2-3	SW2-4	SW2-5	SW2-6	SW2-7	SW2-8	SW2-9	SW2-10	SW2-dup-10
Serial #	334407	334409		334405	334410	334411	334412	334413	334408	334414	3344
Stream width (m)	6.6	6.6	6.6	6.6	11	11	16.6	50	16.6	11	6.6
Stream depth (m)	0.2	0.6	0.2	0.55	0.2	0.5	0.45	0.85	1.2	1.05	0.15
Sample depth (m)	0.1	0.4	0.1	0.3	0.15	0.2	0.2	0.4	0.9	0.7	0.125
Temperature (C)	25	25	25	26	26	25	27	26	26	26	26
pH	8.1	7.9	7.8	7.8	7.8	7.8	7.9	7.9	7.9	7.8	7.9
DO ₂ ppm	10	8	8	6	7	7	6	8	8	7	8
Total Dissolved											
Solids	80	90	80	80	80	80	80	80	80	80	80
Hardness mg/L	126	130	126	126	126	118	120	130	120	128	114
Turbidity	low	high	high	high	high	medium	medium	high	high	high	low
Sediment Sample											
number	SD2-1	SD2-2	SD2-3	SD2-4	SD2-5	SD2-6	SD2-7	SD2-8	SD2-9	SD2-10	SD2-dup-10
Sediment type	gravel, sand	rock, sand	sand, mud	sand, mud	sand, gravel	sand, gravel	muck, sand, gravel	sand, muck, gravel	gravel, sand	gravel, sand	gravel, sand

¹: dup refers to a replicate sample.

Appendix B

Water and Sediment Data

INSTRUMENT PARAMETERS FORM

ABC Study No : 42818

Test Material : PNA's

Sample Matrix : Varies

Autosampler : HP5890 Series I (1716-130A)

V.G Channel No. : 40

Column : DB-5 30m X 0.25mm ID 0.25 μ film thickness (4478332)

Temperature Program :

Initial Temp. : 50°C

Initial Hold : 1.00 min

Initial Ramp : 30°C/min to 80°C

Ramp A : 5°C/min to 230°C

Ramp B : 35°C/min to 300°C

Final Hold : 3.00 min

Purge On : 1.50 min

Injector Temperature : 275°C

Flow Rate: 1.5 mL/min

Detector : FID

Temperature : 300°C

Range: 0

Response Time: 0.1 sec

Injection Volume: 1.0 μ l

These parameters were used for each set that was injected on this instrument.

Prepared By: Jeanne Grant Date: 31 Jan 96

Checked By: Kelly V. Davis Date: 31 Jan 96

INSTRUMENT PARAMETERS FORM

ABC Study No : 42818

Test Material : Hexachloroethane

Sample Matrix : Varies

Autosampler: HP5890 Series II (1626-139)

V.G. Channel No. : 39

Column: DB-5 15m X 0.53mm ID 0.5 μ film thickness (5635316B)

Temperature Program:

Initial Temp. : 50°C

Initial Hold : 1.00 min

Initial Ramp : 2.5°C/min to 70°C

Ramp A : 50°C/min to 300°C

Final Hold : 1.00 min

Purge On : 1.50 min

Injector Temperature : 275°C

Flow Rate: 1.5 mL/min

Detector : ECD

Temperature : 300°C

Range: 3

Injection Volume: 1.0 μ l

These parameters were used for every set injected on this instrument.

Prepared By: Joann Grant

Date: 31 Jan 96

Checked By: Kelly V. Davis

Date: 31 Jan 96

Observations and/or Remarks Form

Test Material: Fog Oil

Lab Form No. 72

Sample Type: Varies

ABC Laboratories, Inc.
7200 E. ABC Lane
Columbia, MO 65202-8015

ABC Study No.: 42818

Principal

Investigator: Kelly V. Davis

Comments

The petroleum ether and methylene chloride fractions were collected from the silica gel column and injected on both FID and ECD. The results from both fractions were summed and reported as a total residue.

Prepared By: Jann Grant

Date: 5 Feb 96

Checked By: Kelly V. Davis

Date: 5 Feb 96

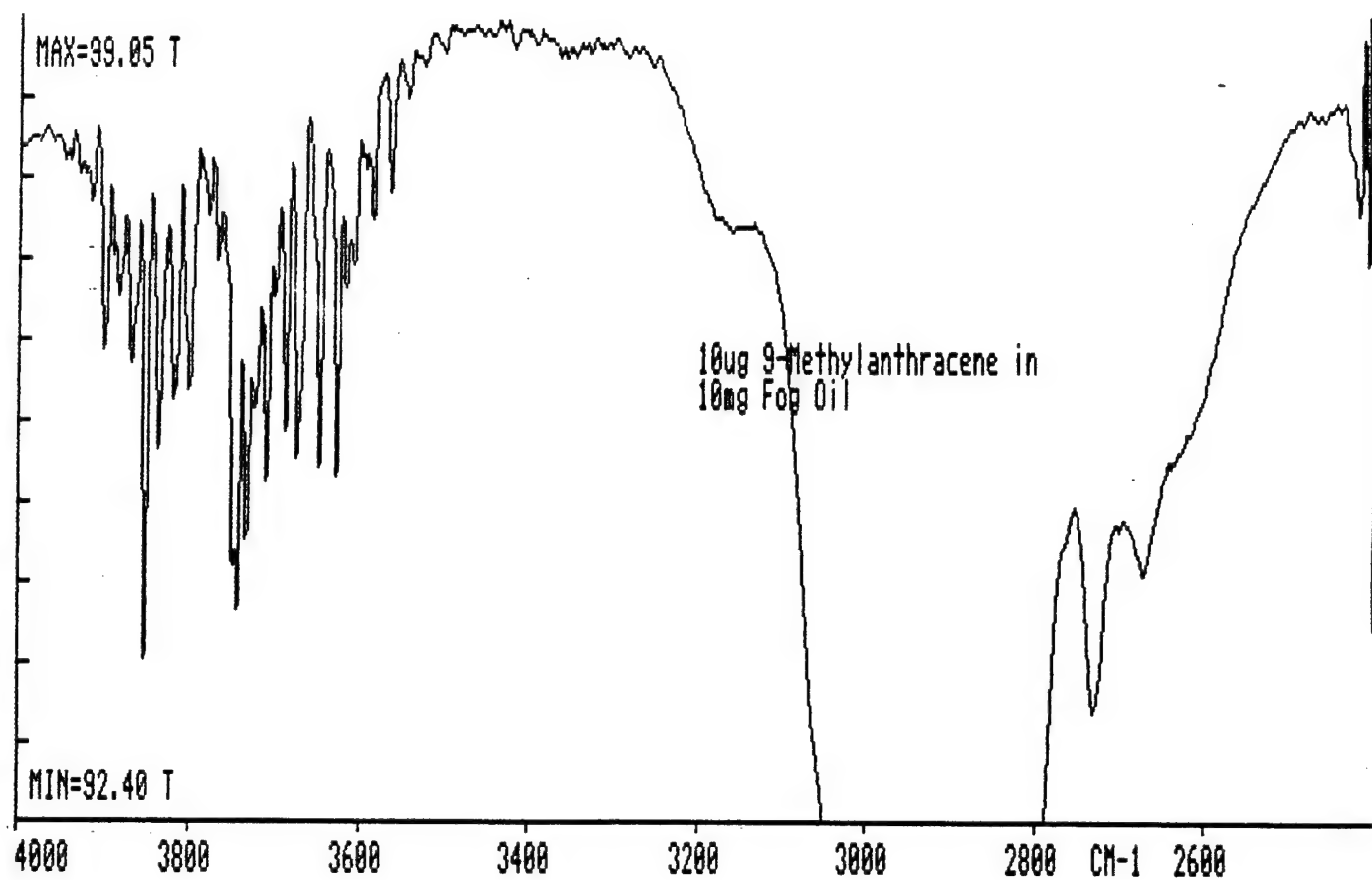
OBSERVATIONS AND/OR REMARKS FORM

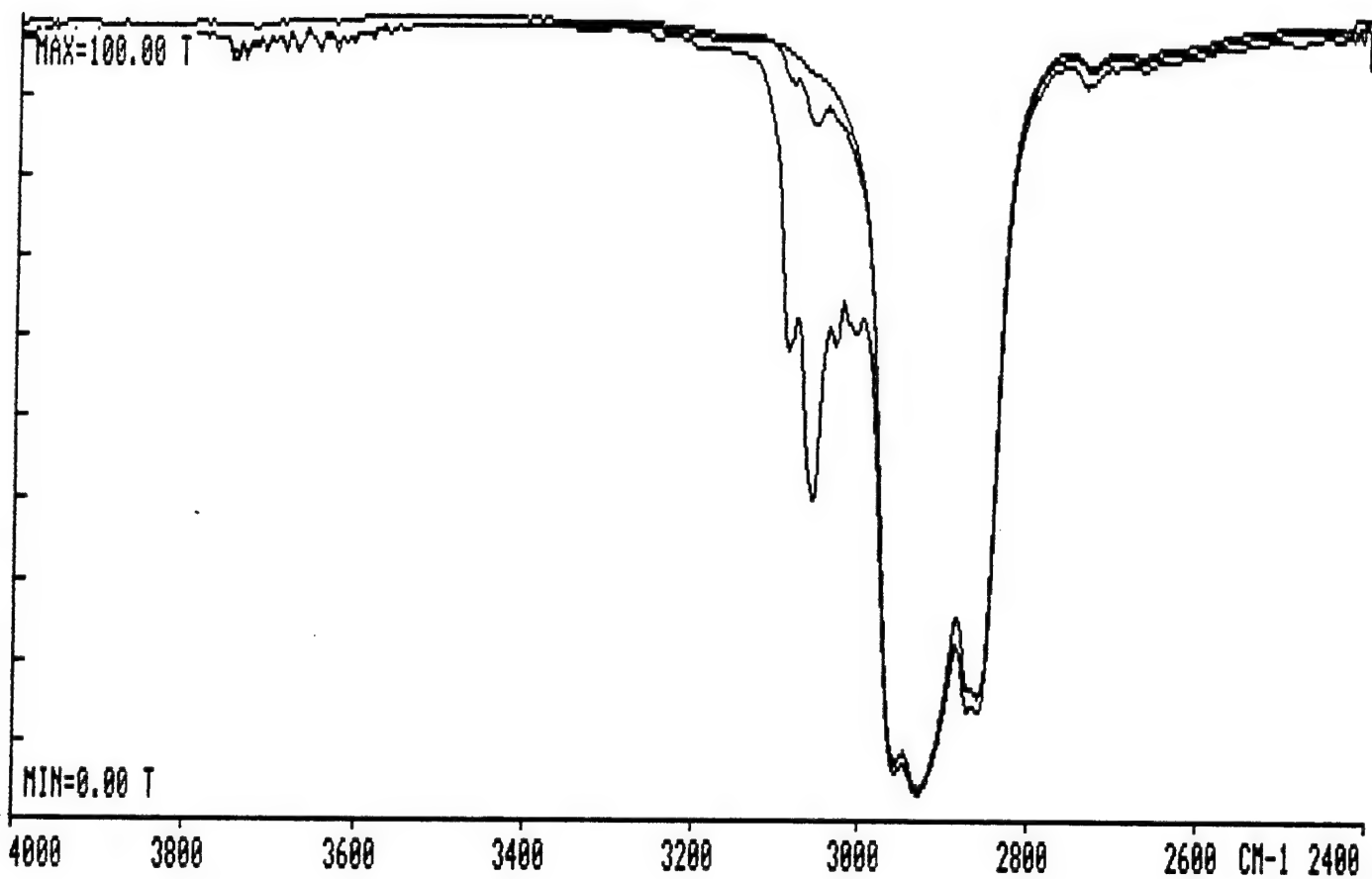
Test Material: Fog OilSample Type: BatsABC Study No: 42818

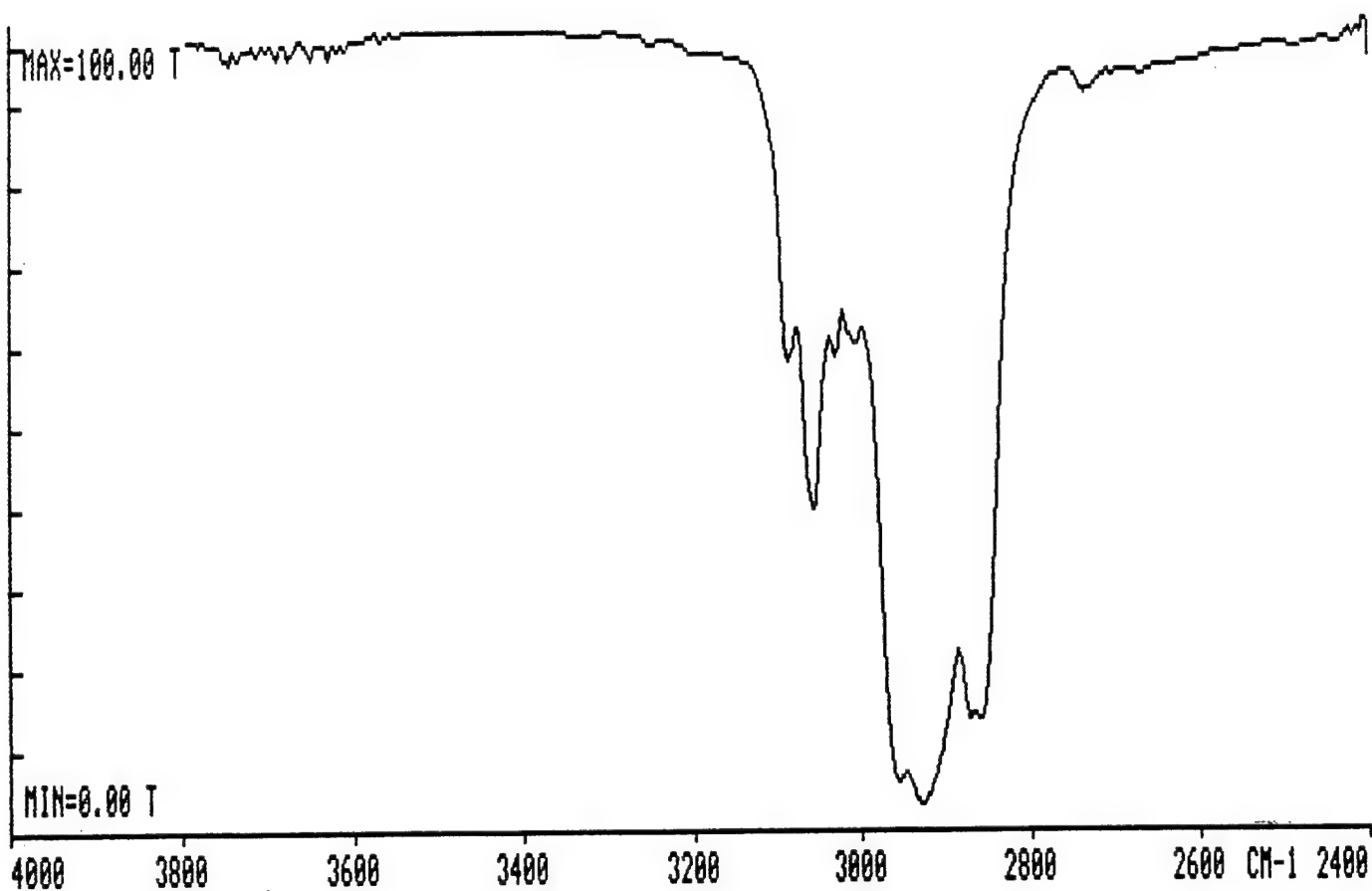
The following bats were dissected; the kidneys and livers were placed in vials containing 10% formalin and identified as follows:

Sample ID	Field ID	Sex	Remarks
TM1-1-808	TM1-1	M	Liver Decomposed
TM1-2-809	TM1-2	M	
TM3-1-809	T-M3-1	M	Liver yellowish, small
TM3-2-810	TM3-2	F	Liver yellowish, small
TM4-1-809	TM4-1	M	
TM4-1-810	TM4-810-1	F	Liver somewhat decomposed
TM3-6-811	TM3-6	F	
TM4-1-811	TM4-1-811	M	
TM2-1-812	TM2-1	F	
TM2-11-812	TM2-11	M	Liver Decomposed
TM2-2-812	TM2-2	F	
TM2-3-812	TM2-3	F	
TM2-4-812	TM2-4	F	Liver Decomposed
TM2-5-812	TM2-5	F	
TM2-6-812	TM2-6	F	
TM4-1-812	TM4-1-812	M	Liver Decomposed
TM2-1-813	TM2-1	M	
TM4-1-813	TM4-1-813	M	
TM4-2-813	TM4-2-813	M	
TM4-3-813	TM4-3-813	M	

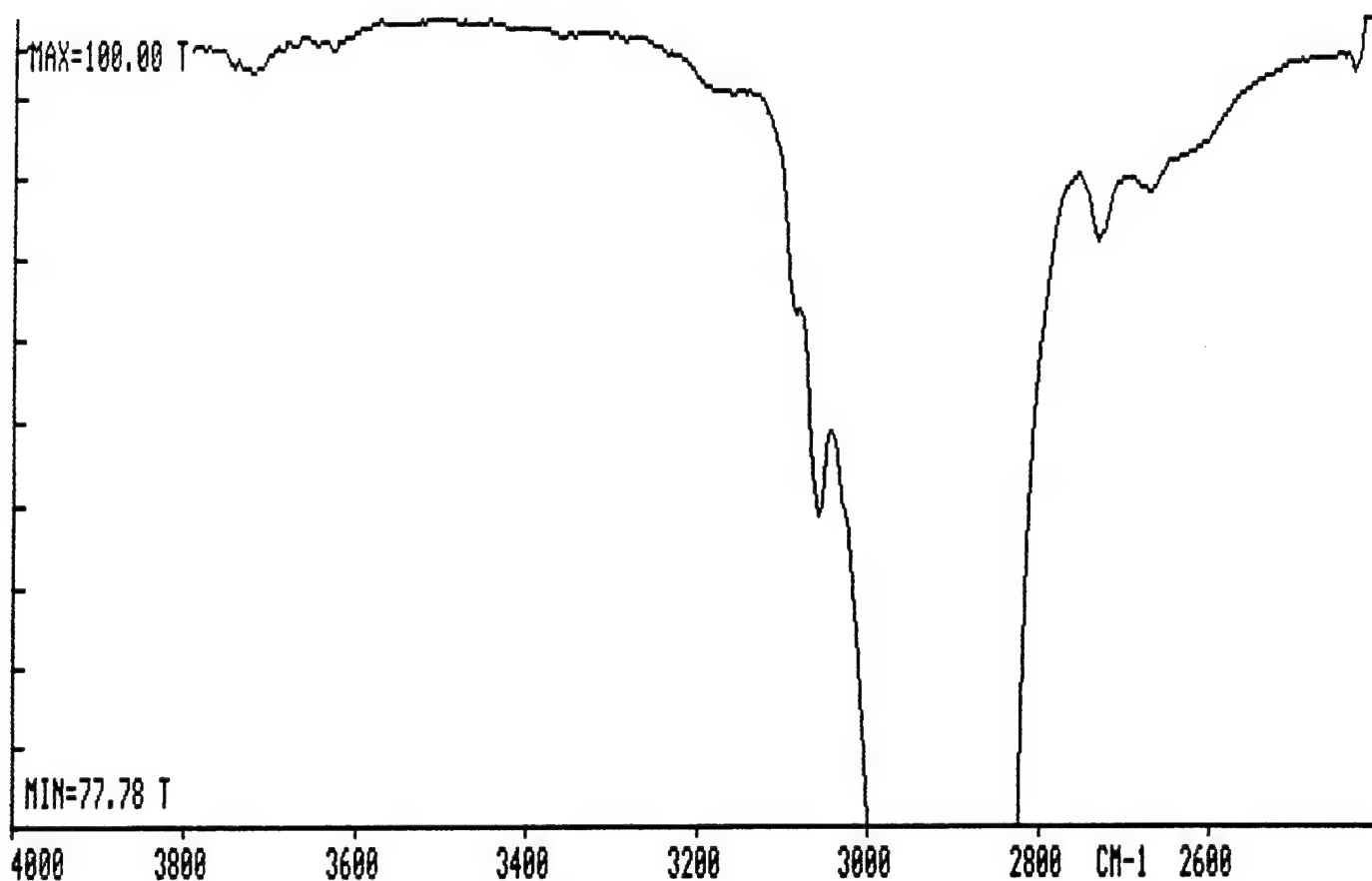
Prepared By: John K. Cooper Date: 8 Sept 95Checked By: Timothy A. Burks Date: 9-8-95Principal Analytical Investigator: Kelly R. Davis Date: 11 Sept 95







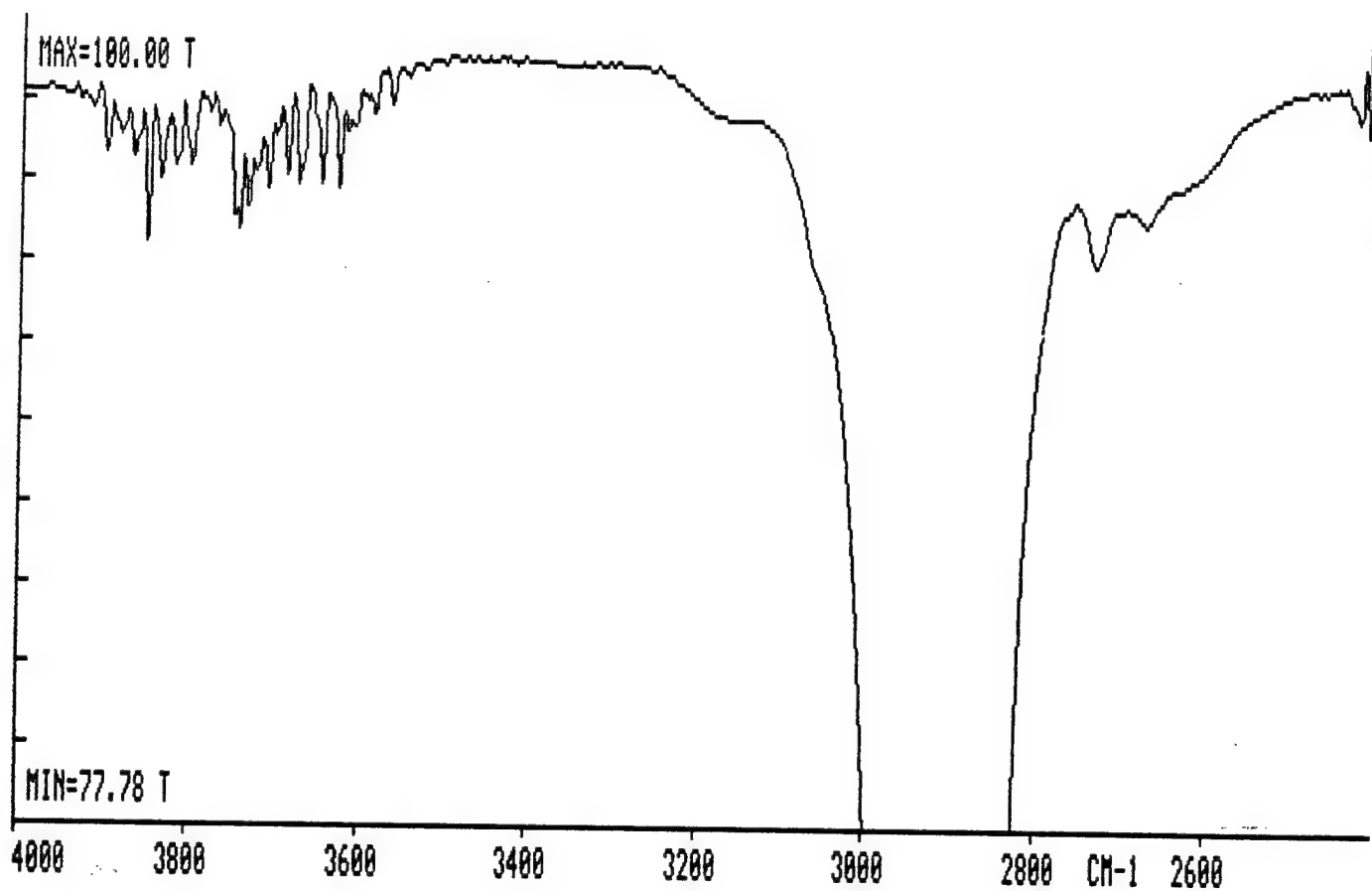
0.01 mL Fog Oil
10 mg 9-methylanthracene Peaks at 3032, ³⁰⁵⁸~~3050~~, 3087
in 10 mL Freon
(1000 mg/mL Fog oil)



0.01 mL fog oil
1 mg 9-methylanthracene
in 10 mL Freon

(100 mg/mL fog oil)

Peaks at: 3058, 3084
3030 (shoulder)



0.01ml Fog Oil
in 10ml Hex

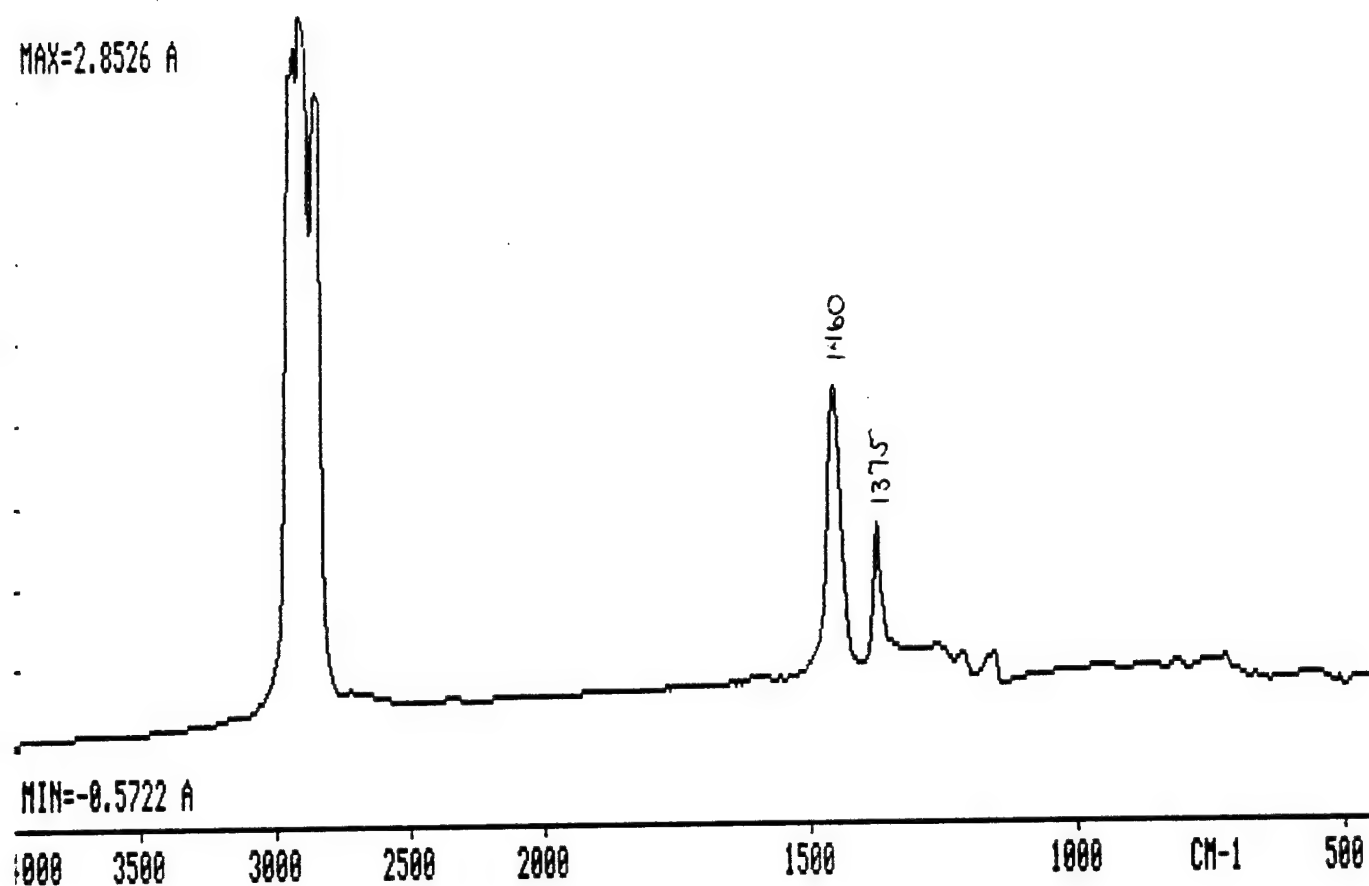


Figure 6 IR Neat Fog Oil on 3m IR card

Figure 5

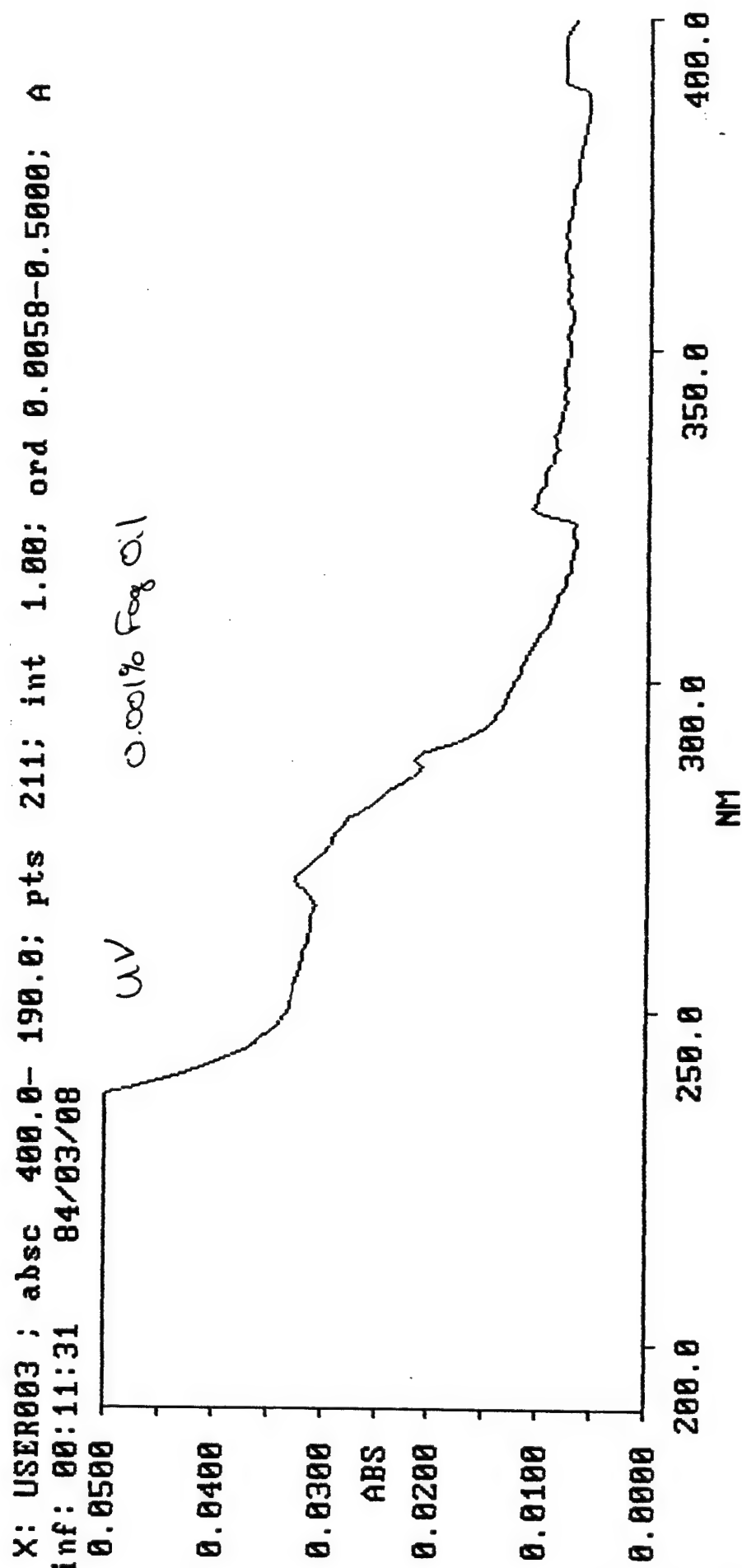


Figure 4

UV

X: USER003 ; absc 400.0- 190.0; pts 211; int 1.00; ord 0.0058-0.5000; A
inf: 00:11:31 84/03/08

1.0000

0.0001% Fe₂O₃

0.7800

0.5600

ABS

0.3400

0.1200

0.1000

200.0

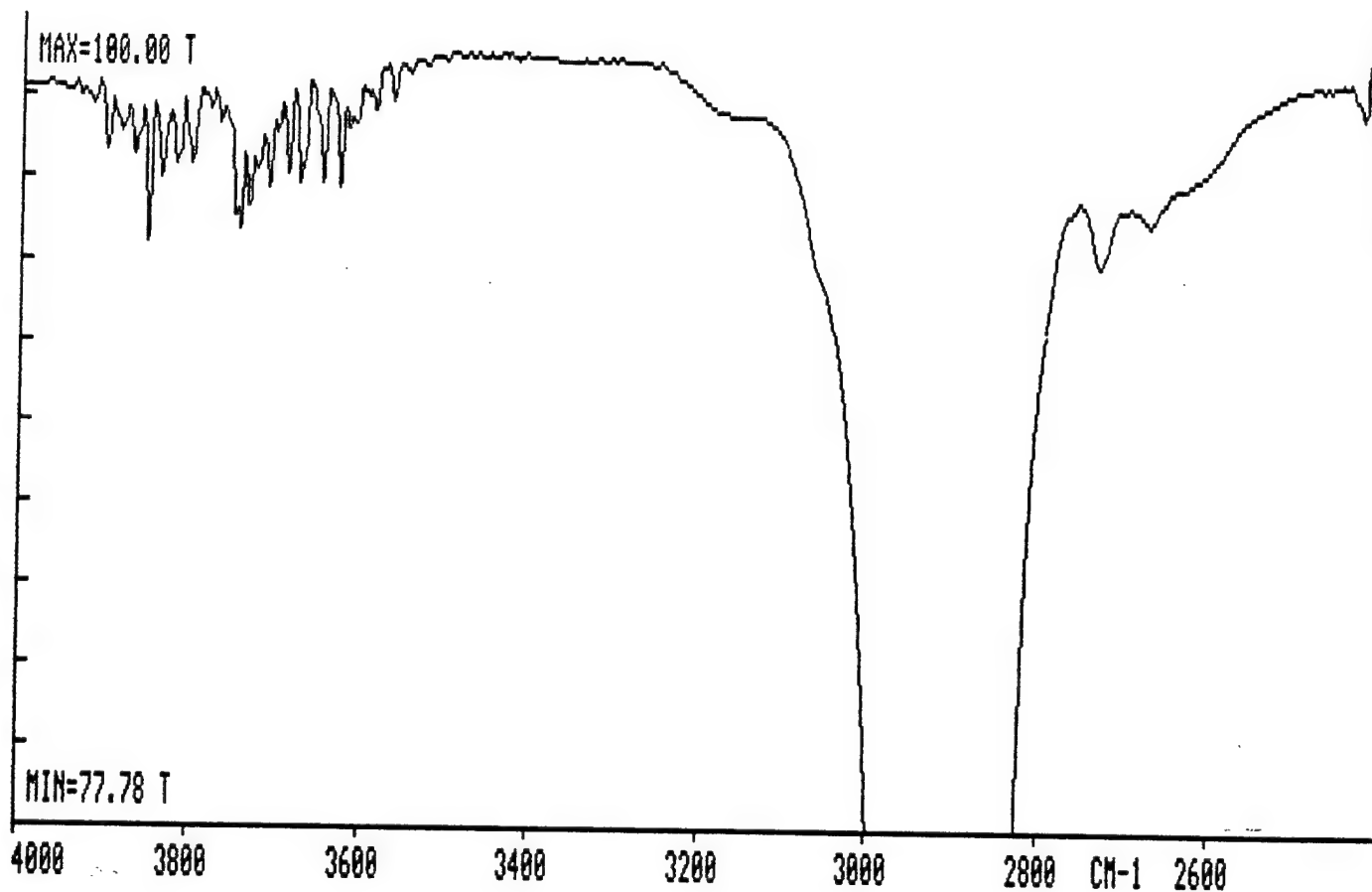
250.0

300.0

350.0

400.0

NM



0.01 ml Fog Oil
in 10 ml Hex

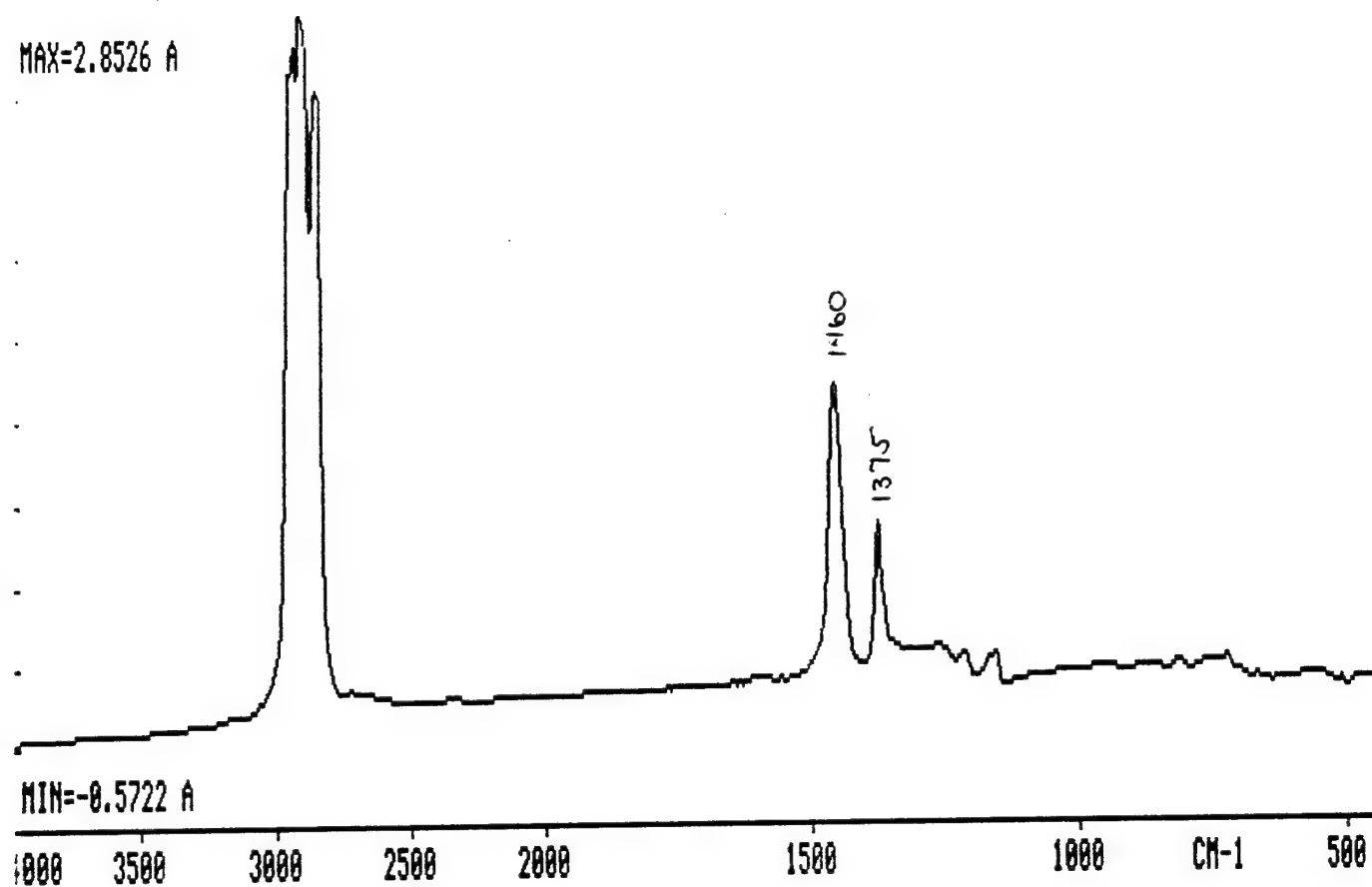


Figure 6 IR Neat Fog Oil on 3m IR card

Figure 3

GC/MSD 1% Fog Oil
Ion chromatogram 75-76 amu
(aromatic ring)

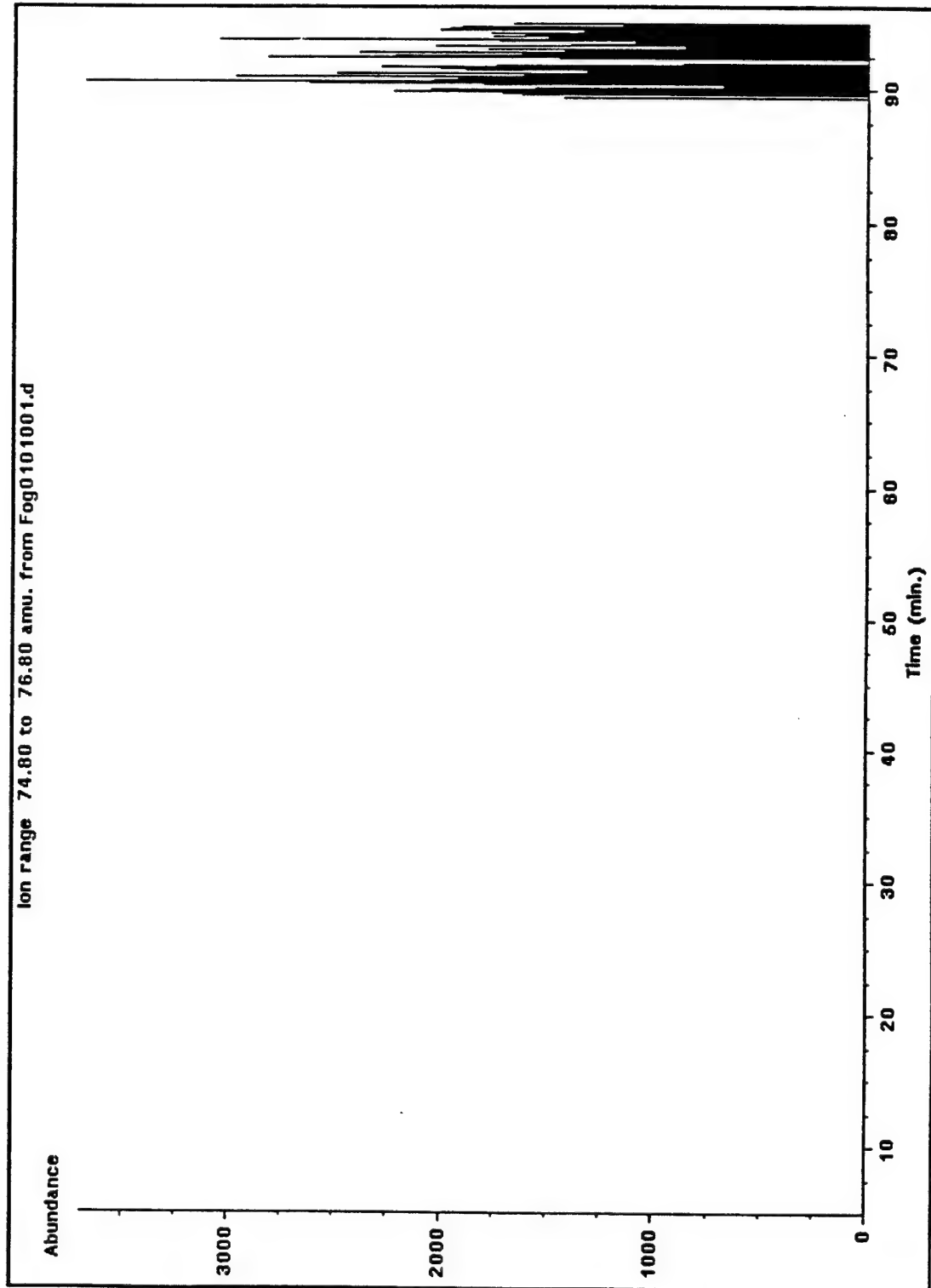


Figure 2 GC/FID of Si cleaned up Fog Oil

ABC Laboratories, Inc.

MCPD ver 2.3

Date of Report: 09 AUG 95 at 08:08:43

MCD0 [42818] 40 FogOilSI.1.1

A, 40/60

Acquired on 8-Aug-1995 at 12:14

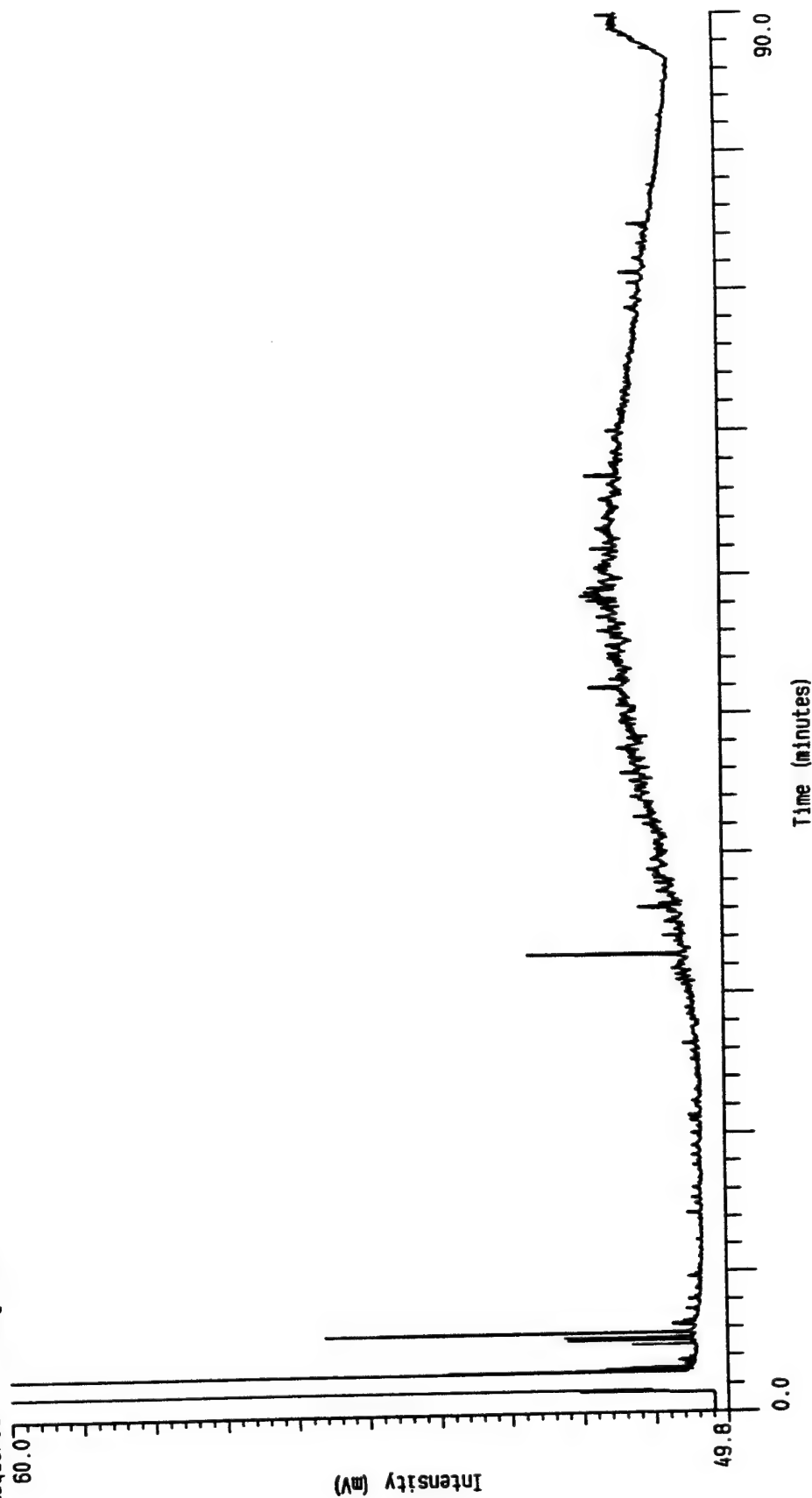


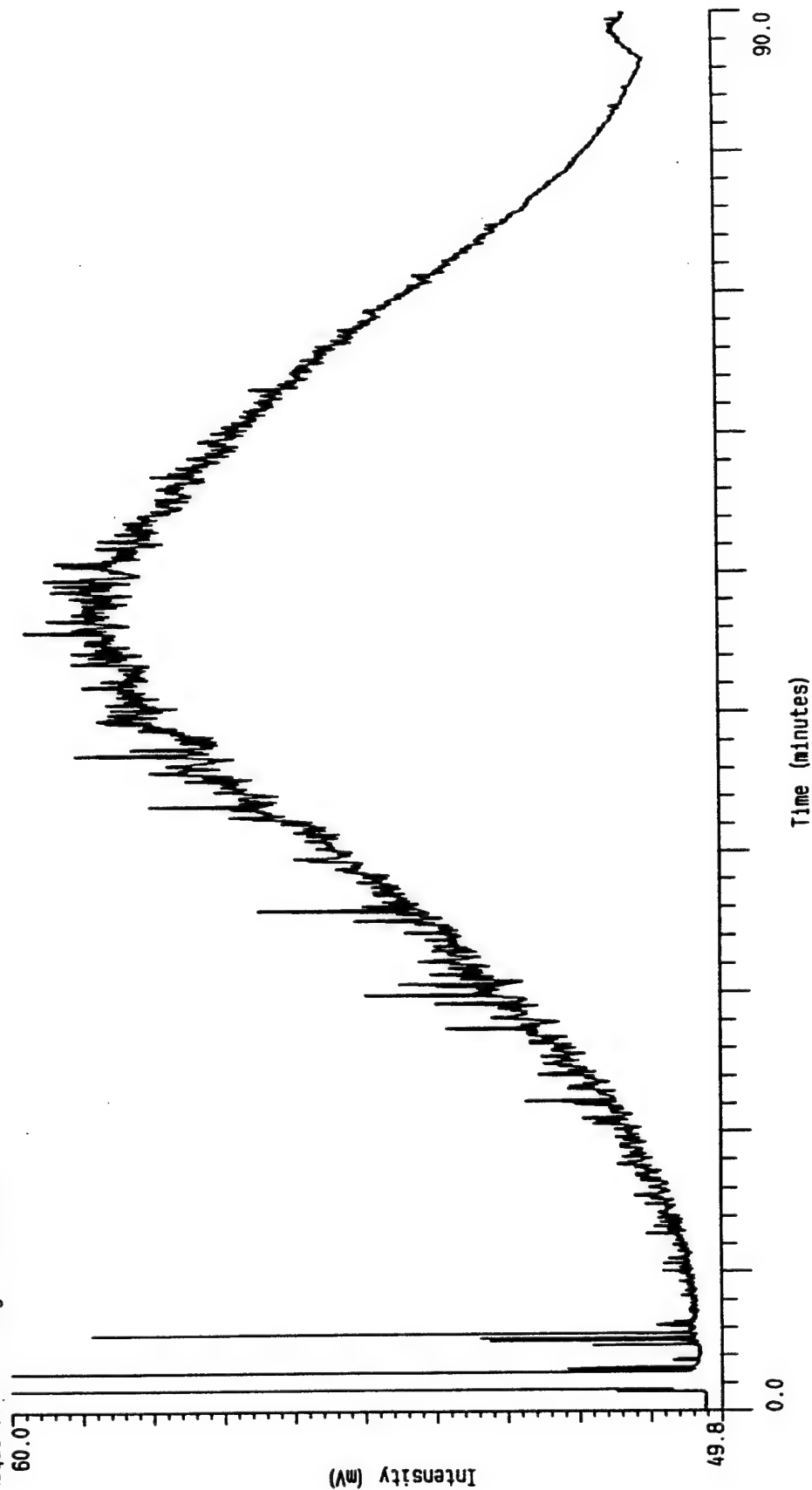
Figure 1 GC/FID of 1% Fog Oil in hexane

ABC Laboratories, Inc.

MCPP ver 2.3

Date of Report: 09 AUG 95 at 08:08:43

MCD0 [42818] 40 FogOil1St, 7.1
Fog Oil
Acquired on 8-Aug-1995 at 21:55



Attempts were made to characterize the fog oil. The parent oil was diluted in hexane to a concentration of 1 %. This was injected on a GC/FID using a DB-5 (Figure 1). The oil was cleaned up using a Si column and the extract injected (Figure 2). The 1 % solution was injected on a GC/MSD and the ion range 75 -76 amu (aromatic ring) was monitored (Figure 3). The absence of any peaks in this mass range indicate there are no aromatics in the fog oil.

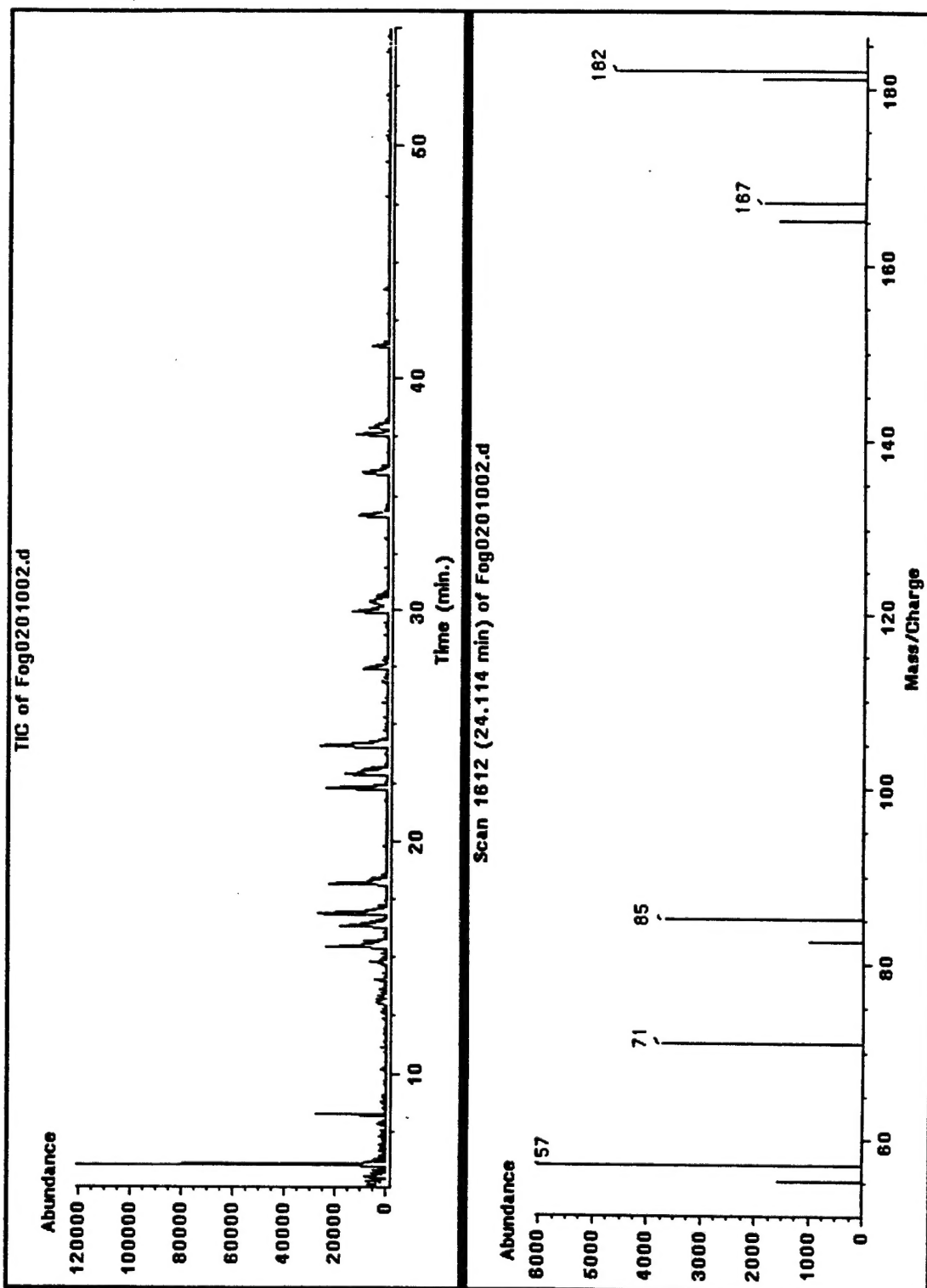
- ① The fog oil was also analyzed by UV. A 0.001 % solution was prepared and scanned from 200 to 400 nm (Figures 4 and 5). The lack of an absorbance peak ~ 250 nm indicates there are no aromatics in the fog oil.
- ② Finally the fog oil was analyzed by IR. The neat fog oil was placed on an IR card (Figure 6). The triplicate peaks at 2850 - 2960 cm^{-1} as well as the 2 peaks at 1375 and 1460 cm^{-1} are characteristic of alkanes. There are no peaks at 3000 - 3100 cm^{-1} (aromatic) or at 3020 - 3080 cm^{-1} and 1640 - 1680 cm^{-1} (alkenes). This indicates that there are no aromatics or alkenes in the fog oil.

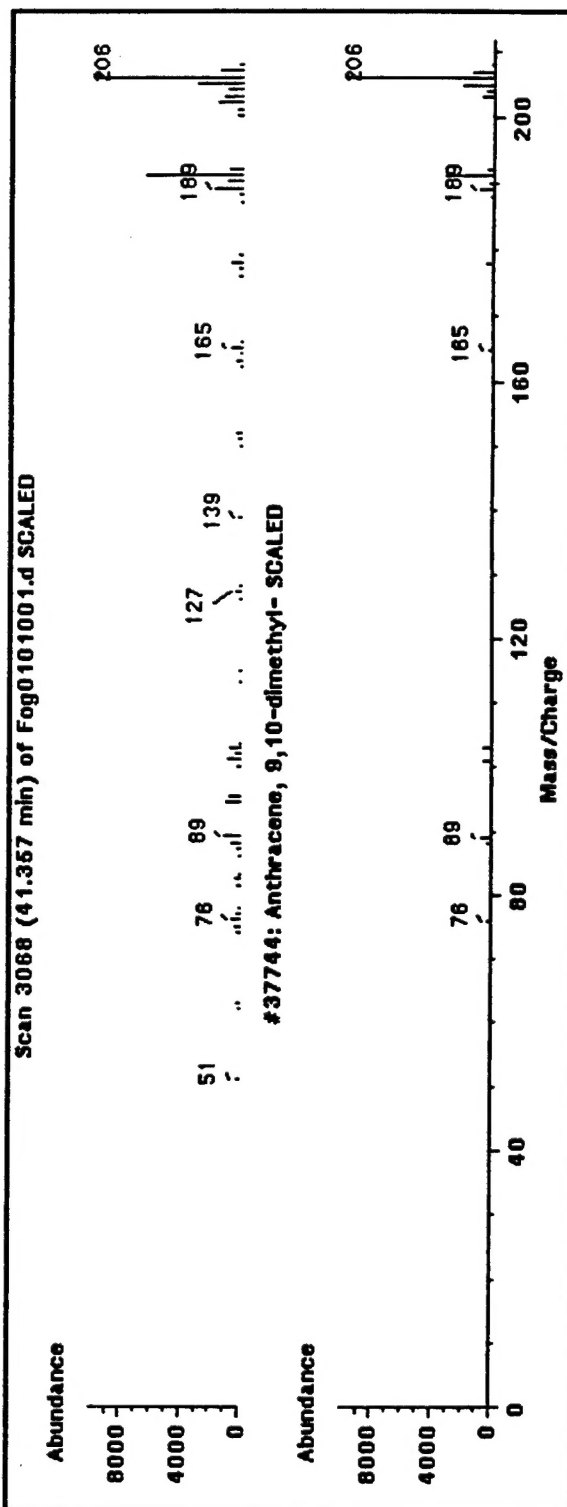
Based on the above preliminary studies, it appears there are no aromatics in this fog oil sample. Further studies need to be done to determine detection limits.

① See Appendix IV

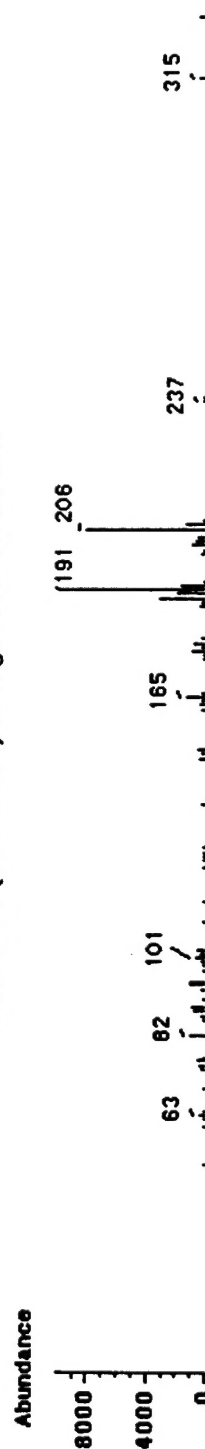
② See Appendix V

Aug 12 PAH's

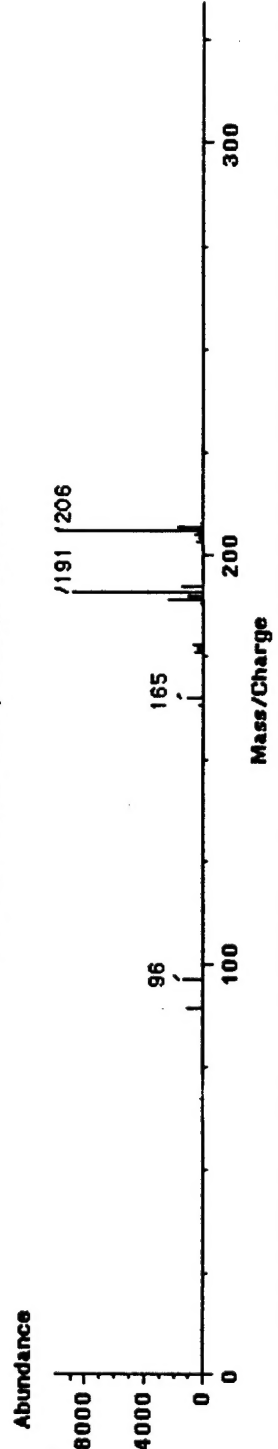




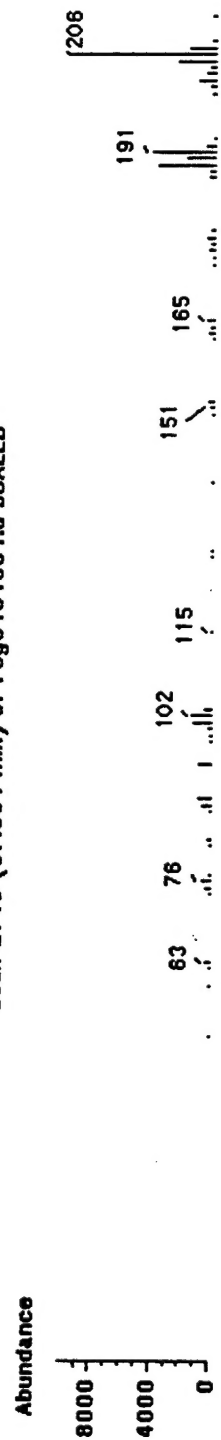
Scan 2768 (37.807 min) of Fog0101001.d SCALED



#124124: Anthracene, 2-ethyl- SCALED



Scan 2749 (37.581 min) of Fog0101001.d SCALED



#124119: Phenanthrene, 3,8-dimethyl- SCALED

